University of California Irvine



2010–11 GENERAL CATALOGUE

Academic Calendar

Up-to-date calendar information as well as detailed information on registration procedures and late charges is available on the Registrar's Web site at http://www.reg.uci.edu.

NOTE: The School of Law and the School of Medicine's M.D. program have their own academic calendars; information is available from those schools.

Fall Quarter, 2010

Quarter Begins	Sept. 20 (Mon.)
Academic Advising and Orientation	Sept. 20–22 (Mon.–Wed.)
Instruction Begins	Sept. 23 (Thur.)
Veterans' Day Holiday	Nov. 11 (Thur.)
Thanksgiving Holiday	Nov. 25–26 (Thur.–Fri.)
Instruction Ends	Dec. 3 (Fri.)
Final Examinations	Dec. 6–10 (Mon.–Fri.)
Quarter Ends	Dec. 10 (Fri.)
Winter Administrative Recess	Dec. 23–31 (Thur.–Fri.)

Winter Quarter, 2011

Quarter Begins	Jan. 3 (Mon.)
Instruction Begins	Jan. 3 (Mon.)
Martin Luther King Jr. Holiday	Jan. 17 (Mon.)
Presidents' Day Holiday	Feb. 21 (Mon.)
Instruction Ends	Mar. 11 (Fri.)
Final Examinations	Mar. 14–18 (Mon.–Fri.)
Quarter Ends	Mar. 18 (Fri.)

Spring Quarter, 2011

Quarter Begins	Mar. 23 (Wed.)
Cesar Chavez Day Holiday	Mar. 25 (Fri.)
Instruction Begins	Mar. 28 (Mon.)
Memorial Day Holiday	May 30 (Mon.)
Instruction Ends	June 3 (Fri.)
Final Examinations	June 6–10 (Mon.–Fri.)
Quarter Ends	June 10 (Fri.)
Commencement	June 10–12 (Fri.–Sun.)

Summer Sessions, 2011

Session I	June 20–July 27 (Mon.–Wed.)
10–Week Session	June 20–Aug. 26 (Mon.–Fri.)
Independence Day Holiday	July 4 (Mon.)
Session II	Aug. 1–Sept. 7 (Mon.–Wed.)
Labor Day Holiday	Sept. 5 (Mon.)



The information in this publication will be made available in alternative formats for people with disabilities, upon request. Requests should be directed to the Disability Services Center, telephone (949) 824-7494 (voice); 824-6272 (TTY). The campus and all buildings are accessible by wheelchair.

How to use the *Catalogue:* See page 13.

How to obtain the *Catalogue:* Copies of the *2010–11 UCI General Catalogue* are available in person for $6 (plus tax) at the UCI Bookstore. Catalogues are also available for purchase online: California, $15; continental U.S., $17; Alaska and Hawaii, $20. Prices include tax and USPS, UPS Ground, or equivalent shipping. To order online, please visit the UCI Bookstore Web site at http://www.book.uci.edu/. For international orders ($24), cashier's checks or International Money Orders, payable in U.S. dollars, should be made payable to UC Regents, and sent to the University of California, Irvine, UCI Bookstore, Attn: Customer Service Department, 210-B Student Center, Irvine, CA 92697-1550.

The *Catalogue* also is available for reference on the World Wide Web at http://www.editor.uci.edu/catalogue/.

On the front cover: This gathering of Campuswide Honors Program freshmen and their peer mentors is a subset of the 650 highly motivated UCI students who participate in this selective program each year. Special seminar-style honors courses, close interaction with peers, mentorship by UCI's top faculty, and the opportunity to participate in undergraduate research are hallmarks of the Campuswide Honors Program. More information is available at http://www.honors.uci.edu/. *Photograph: Brian Lance, Campuswide Honors Program Office*

On the back cover: UCI student staffers for SPOP, the Student Parent Orientation Program, take a break with campus mascot Peter the Anteater at the UCI Student Center Plaza. The bronze sculpture was inspired by an original Michael Fernandez drawing and forged by sculptor Edward E. Hlavka. A gift from the Class of 2003 supported the commission of this artwork. E-mail your photo with Peter to vcsa@uci.edu. Information about SPOP, UCI's comprehensive orientation program, is available at http://www.dos.uci.edu/orientation/. *Photograph: Theresa Blasingame, University Editor's Office*

Visit UCI online at http://www.uci.edu/

2010–11 GENERAL CATALOGUE

UNIVERSITY OF CALIFORNIA, IRVINE

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University of California, Irvine

2010–11 General Catalogue, Volume 44

The *UCI General Catalogue* is published annually in July by the University of California, Irvine, University Editor's Office, 435 Aldrich Hall, Irvine, CA 92697-1010.

The *UCI General Catalogue* constitutes the University of California, Irvine's document of record. While every effort is made to ensure the correctness and timeliness of information contained in the *Catalogue*, the University cannot guarantee its accuracy. Changes may occur, for example, in course descriptions; teaching and administrative staff; curriculum, degree, and graduation requirements; and fee information. Contact the individual academic program or administrative office for further information.

INTRODUCTION

THE UNIVERSITY OF CALIFORNIA

Mark G. Yudof, **President**

The University of California (UC) was chartered as the State's only Land Grant College in 1868. Today, UC is one of the world's largest and most renowned centers of higher education and has a combined enrollment of 220,000 students on 10 campuses—Berkeley, Davis, Irvine, Los Angeles, Merced, Riverside, San Diego, San Francisco, Santa Barbara, and Santa Cruz. Among the campuses there are five medical schools, a school of veterinary medicine, and professional schools of business administration, education, engineering, law, oceanography, and many others. The collections of the more than 100 UC libraries are surpassed in size on the American continent only by the Library of Congress collection.

The UC faculty is internationally noted for its distinguished academic achievements. UC-affiliated faculty and researchers have won 57 Nobel Prizes and 57 National Medals of Science. National Academy of Sciences membership exceeds 350 and Institute of Medicine membership exceeds 150. UC creates an average of three new inventions every day, and for 14 years in a row, has developed more patents than any other university in the country.

UC maintains a variety of research facilities, agricultural field stations, and extension centers in more than 100 locations throughout California. Public services include medical and dental clinics, information services for agricultural and urban populations, a broad program of continuing education, museums and art galleries, and more. Detailed information about the University of California's teaching, research, and public service mission is available online at http://www.universityofcalifornia.edu/.

THE IRVINE CAMPUS

Michael V. Drake, M.D., **Chancellor**

The University of California, Irvine (UCI) opened in 1965 with 116 faculty and 1,589 students. Since then, UCI programs, faculty and graduates have achieved distinction in virtually every discipline.

Two Nobel Prizes in 1995 for founding faculty F. Sherwood Rowland in Chemistry and the late Frederick Reines in Physics helped to secure UCI's position among the leading American research universities. In 2004, Irwin A. Rose, Department of Physiology and Biophysics, became UCI's third Nobel Laureate (chemistry). UCI has been ranked prominently along with much older universities for excellence in the arts and humanities, Earth system science, management, social sciences, technology, and information systems.

For quality of educational experience and caliber of faculty, UCI consistently ranks among the nation's best public universities, and among the top 50 universities overall. Election to the American Association of Universities (AAU), a group of 62 of the most distinguished research institutions, is another indication of UCI's stature in the academic community.

As a research university, UCI challenges students at every level, both academically and personally. While research is critical to graduate education, the research environment also opens up new educational experiences for undergraduates. Students have access to faculty at the forefront of their fields, and they also have opportunities to participate directly in faculty research projects. In addition, to empower students for the future in an information-focused society, UCI has integrated computer technology throughout the curriculum and campus life.

UCI is committed to the discovery and transmission of knowledge. It makes available to its 27,790 students (22,225 undergraduate, 125 post-baccalaureate, 4,290 graduate, and 1,150 heath sciences graduate students, medical students, and residents) the education, skills, and credentials which provide the basis for lifelong personal and professional growth.

UCI's education and research missions are fulfilled in its academic units, which are described briefly below, and in its formal research units, which are described in the Office of Research section later in this *Catalogue.*

The **Claire Trevor School of the Arts** teaches the creative as well as the academic and critical dimensions of the arts. It is concerned with the vitality of the arts in society. Faculty energies are directed toward the refinement, enhancement, and encouragement of students' artistic and creative talents and toward the development of the students' understanding of related theory and history. The School offers programs which emphasize extensive studio and workshop experiences, essential theoretical and historical background studies, and exercises in criticism. There are 1,100 students in the School, including 960 undergraduate and 140 graduate.

The **School of Biological Sciences** is one of the campus's larger academic units, with 4,920 students (4,500 undergraduate and 420 graduate). Faculty research areas include neural plasticity and behavior (which in part encompasses the development of the nervous system, memory, response to injury, and degenerative brain diseases such as Alzheimer's); the nature of cell-cell interactions; pattern formation; the elucidation of ecological conditions and evolutionary histories that have been the driving forces in organism design and functional diversity; the organization and expression of genes; biomolecular structure; molecular pathogenesis; human mitochondrial genetics; and cell biology.

The Paul Merage School of Business faculty research and teach in the fields of accounting, economics, finance, health care management, information systems, marketing, operations and decision technologies, organization management, public policy, real estate and strategy. Based on a thematic approach throughout the curriculum, the School focuses on three critical drivers of business growth: strategic innovation, information technology, and analytic decision making. The Merage School enrolls 320 undergraduates, 220 students in the M.B.A. and Ph.D. programs, and 610 in the Fully Employed M.B.A, Executive M.B.A., and Health Care Executive M.B.A. programs.

The **Department of Education** offers graduate degree and credential programs for teachers and administrators in California's public elementary and secondary schools and an undergraduate minor in Educational Studies. The Department integrates the themes of Learning, Cognition, and Development; Social Context and Educational Policy; and Language, Literacy, and Technology across its programs. The faculty is multidisciplinary; their scholarly work arises from the common belief that education environments, both in and out of school, are the locus of change in the quality of life and the availability of productive life choices for learners of all ages.

The **Henry Samueli School of Engineering,** with 3,125 students (2,420 undergraduate, 705 graduate), focuses on the analysis and design of physical systems applying modern scientific principles to the development of technology for society. The major research disciplines are aerospace, biochemical, biomedical, chemical, civil, computer, electrical, environmental, materials science, and mechanical engineering. Research areas include biochemical and bioreactor engineering, earthquake engineering, water

FROM THE CHANCELLOR



Welcome to the University of California, Irvine. As a UC student, you have access to resources that extend across our campus, throughout our state, and beyond. This catalogue will serve as an invaluable guide to enhancing your UC Irvine experience.

UCI combines the strengths of a major research university with the bounty of an incomparable Southern California location. Over four remarkable decades, we have become internationally recognized for efforts that are improving lives through research and discovery, fostering excellence in scholarship and teaching, and engaging and enriching the community.

Increasingly a first-choice campus for students, UCI attracts record numbers of undergraduate applications each year and admits freshmen with highly competitive academic profiles.

Newly launched programs in public health and nursing science are expanding our educational role in these and other fields critical to California's health and prosperity. In 2009, our law school became the state's first public law school to open in more than 40 years.

UCI is a center for quality education and is consistently ranked among the nation's best universities. Achievements in the sciences, arts, humanities, medicine, and management have garnered top 50 national rankings for more than 40 academic programs. Three UCI researchers have won Nobel Prizes—two in chemistry and one in physics.

UCI reaches beyond the classroom and laboratory to help solve societal issues and support human development. We are a hub for stem cell research, a trailblazer in understanding global warming, and a leader in the fight against breast cancer. Our nationally ranked medical center in Orange serves as Orange County's only Level I trauma center, and we recently opened a new state-of-the-art university hospital that will further strengthen medical care for the region's citizens.

A major intellectual and cultural center, UCI offers numerous public activities and events. The Claire Trevor School of the Arts and the School of Humanities produce engaging and entertaining cultural programs, while UCI's Anteater athletes have won more than two dozen national championships.

UCI is benefiting the community and the world in countless ways through its scholarly, scientific, creative, and economic contributions. Orange County's largest employer, UCI generates an annual economic impact on the county of $3.9 billion. We have implemented a strategic plan that will ensure that the campus continues to inspire excellence as it fulfills its research, teaching, and public service missions in the decades ahead.

These accomplishments depend on our commitment to a set of core values: respect, intellectual curiosity, commitment, integrity, empathy, appreciation, and fun. These values allow people to transcend limitations and create something greater than themselves. I am proud that—at UCI—we live these values every day.

I encourage you to take advantage of all that UCI has to offer. I look forward to seeing you on campus and to being a part of this very important time in your life.

Sincerely,

Michael V. Drake, M.D.
Chancellor

resources, transportation, parallel and distributed computer systems, intelligent systems and neural networks, image and signal processing, opto-electronic devices and materials, high-frequency devices and systems, integrated micro and nanoscale systems, fuel cell technology, fluid mechanics, combustion and jet propulsion, materials processing, robotics, and modern control theory.

The **School of Humanities** faculty have been repeatedly honored for their teaching and scholarly excellence. Included in the faculty's more than 100 research specialties are literary criticism, film studies, media studies, philosophical analysis, historical inquiry, art history, and East Asian languages and literatures. The faculty also participate in programs that cut across disciplinary boundaries such as African American Studies, Asian American Studies, Religious Studies, and Women's Studies. At the core of the educational mission of the humanities is imparting to students tools of analysis that will help them interpret, understand, describe, and explain the world around them. The School has 2,510 students, including 2,090 undergraduate and 420 graduate.

The **Donald Bren School of Information and Computer Sciences** (ICS) has 1,150 students (800 undergraduate and 350 graduate). Faculty are actively engaged in research and teaching in the design of algorithms and data structures; embedded computer systems; networked and distributed systems; systems software; mobile computing; artificial intelligence; data mining; multimedia; databases and information retrieval; computer graphics and visualization; large-scale data analysis; biomedical informatics and computational biology; urban crisis response; Internet and ubiquitous computing; advanced technology for software and information systems; computer-supported cooperative work and human-computer interaction; digital arts and embodied interaction; managerial and social aspects of computing technology; statistics and statistical theory; and business information management.

Interdisciplinary Studies programs provide students with opportunities to pursue subject areas which derive from the interaction of different disciplines such as Computer Science and Engineering, Civic and Community Engagement, and Transportation Science.

The **School of Law,** established by the University of California Board of Regents in November 2006, welcomed its inaugural class of students in fall 2009. The School offers the J.D. (Juris Doctor). Students will receive an education that includes traditional areas of legal doctrine but in an innovative context designed to prepare them for practice in the twenty-first century. Planned joint-degree programs will connect legal education with the wide range of academic and professional opportunities of a major research university.

The **School of Physical Sciences** has a student body of 1,605 (1,115 undergraduate and 490 graduate). Researchers in the School are conducting investigations in atmospheric chemistry (including the discovery of the adverse impact of human-made chlorofluorocarbon compounds on the earth's ozone layer), biogeochemistry and climate, synthetic chemistry, laser spectroscopy, condensed matter physics, elementary particle physics, plasma physics, and pure and applied mathematics and mathematical physics.

The **School of Social Ecology**, a multidisciplinary unit established in 1970, is unique to UCI. The School's central objectives are the application of scientific methods to the analysis and resolution of societal problems, and the development of theory and knowledge pertinent to social, behavioral, environmental, and legal phenomena. Among issues of long-standing interest are crime and justice in society, social influences on human development over the life cycle, urban and community planning, and the effects of the physical environment on health and behavior. There are 2,450 students in the School, including 2,160 undergraduate and 290 graduate.

The **School of Social Sciences,** with 6,590 students (6,220 undergraduate and 370 graduate), is the largest academic unit at UCI. The faculty, many of whom are nationally recognized, have expertise in a wide range of specific social science topics. Research areas include mathematical modeling of perception and cognitive processes; economic analysis of transportation; examination of the impact of society's political system on its economy; study of social structure and values in different cultures through a rigorous scientific methodology; exploration of authority structures and inequality in society; and globalization and international affairs.

The **College of Health Sciences** has 800 students (760 undergraduate and 40 graduate) in the Program in Nursing Science, the Department of Pharmaceutical Sciences, and the Program in Public Health; and 440 medical students and 650 residents and fellows in the **School of Medicine**. The School is dedicated to advancing medical knowledge and clinical practice through scholarly research, physician education, and high-quality care; nurtures the development of medical students, resident physicians, and scholars in the clinical and basic sciences; and supports the dissemination of research advances for the benefit of society. The new UC Irvine Douglas Hospital at UC Irvine Medical Center has modern facilities for conducting medical research and training future and practicing physicians, allowing more opportunities for researchers and clinicians to collaborate on patient care. A new state-of-the-art Medical Education Building opened in January 2010 and houses the latest in technology to advance student active learning opportunities.

Academic Goals

UCI offers programs designed to provide students with a foundation on which to continue developing their intellectual, aesthetic, and moral capacities. Programs and curricula are based on the belief that a student's collective University experience should provide understanding and insight which are the basis for an intellectual identity and lifelong learning.

An important aspect of UCI's educational approach is the emphasis placed on student involvement in independent study, research, and the creative process as a complement to classroom study. Independent research in laboratories, field study, participation in writing workshops, and in arts productions are normal elements of the UCI experience. In many departments, special programs and courses which involve students in original research and creative activities are integrated into the curriculum.

UCI provides an atmosphere conducive to creative work and scholarship at all levels, to exploring the accumulated knowledge of humanity, and to developing new knowledge through basic and applied research. Along with these objectives, UCI has a serious commitment to public service. The campus generates research expertise which may be applied to regional and national social issues, and provides humanistic understanding of the problems facing society.

Academic Structure

UCI's instruction and research programs focus on fundamental areas of knowledge, and at the same time provide for interdisciplinary and professional study through the Claire Trevor School of the Arts, School of Biological Sciences, The Paul Merage School of Business, Department of Education, The Henry Samueli School of Engineering, School of Humanities, Donald Bren School of Information and Computer Sciences, Interdisciplinary Studies, School of Law, School of Physical Sciences, School of Social Ecology, School of Social Sciences, and the College of Health Sciences, which includes the School of Medicine.

The Office of Academic Affairs has responsibility for all programs of instruction and research. Along with the Graduate Division and the Division of Undergraduate Education, Academic Affairs reports directly to the Executive Vice Chancellor/Provost. Matters of educational policy, including approval of programs, courses, and grades, are the responsibility of the Irvine Division of the Academic Senate.

UCI Student Affairs supports the University's academic mission from outreach to alumni participation. Student Affairs offers comprehensive programs and services to advance co-curricular learning, foster student leadership, enhance the quality of student life, and promote the general welfare of the campus community.

The Division of Undergraduate Education provides leadership in developing policies and programs for the improvement of undergraduate education in such areas as general education, retention, advising, curricular development, undergraduate scholarship and research activities, international education, academic internship, grant proposals, assessment, improvement of instruction, and improvement of instructional space. Undergraduate Education also administers programs and services affecting undergraduate education which require campus-level attention and coordination and which do not come under the direct authority of the heads of academic units or the Irvine Division of the Academic Senate.

The Graduate Division serves as the campuswide advocate for the advancement of graduate education and oversees all master's and doctoral programs, postdoctoral training programs, and the post-baccalaureate teacher credential program. The Graduate Division has a leadership role with UCI's academic units and provides implementation guidelines and procedures related to University policy as it affects the interconnected aspects of graduate student education, including admissions, student financial support, enrollment and registration, academic standards, requirements for graduate degree programs, student services, and diversity programs.

Accreditation

UCI is a member of the Western Association of Schools and Colleges (WASC). The campus is fully accredited by the Senior Commission of WASC. This accreditation requires periodic review in accord with WASC policies and standards. Further information is available from WASC, 985 Atlantic Avenue, Suite 100, Alameda, CA 94501; telephone (510) 748-9001.

In addition, the undergraduate degree program of the Department of Chemistry is accredited by the American Chemical Society; the credential programs of the Department of Education are approved by the California Commission on Teacher Credentialing (CCTC); the undergraduate majors in Aerospace Engineering (AE), Biomedical Engineering (BME), Chemical Engineering (ChE), Civil Engineering (CE), Computer Engineering (CpE), Electrical Engineering (EE), Environmental Engineering (EnE), Materials Science Engineering (MSE), and Mechanical Engineering (ME) offered by the Departments of Biomedical Engineering, Chemical Engineering and Materials Science, Civil and Environmental, Electrical Engineering and Computer Science, and Mechanical and Aerospace Engineering are accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700; the undergraduate major in Biomedical Engineering: Premedical (BMEP) is not designed to be accredited, therefore is not accredited by ABET; the M.S. program in Genetic Counseling is accredited by the American Board of Genetic Counseling; The Paul Merage School of Business is accredited by AACSB International—The Association to Advance Collegiate Schools of Business; the M.D. program of the UCI School of Medicine is accredited by the Liaison Committee of the Association of American Medical Colleges and the American Medical Association; the undergraduate major in Nursing Science is approved by the Board of Registered Nursing and the Commission



on Collegiate Nursing Education (CCNE); and the Master of Urban and Regional Planning program is accredited by the National Planning Accreditation Board.

Office of Equal Opportunity and Diversity

The Office of Equal Opportunity and Diversity (OEOD) provides consultation services and training programs to the UCI campus and the medical center on the interpretation and application of both UCI policies and Federal and State laws regarding sexual harassment, equal opportunity, and diversity. It also develops and monitors UCI's Affirmative Action Plan for staff and faculty as required by Federal regulations.

OEOD investigates and provides assistance to UCI students, faculty, and staff in resolving complaints of discrimination and sexual harassment. OEOD also offers a variety of workshops on diversity, cross-cultural communication, sexual harassment prevention, and conflict resolution in a diverse workplace/community to promote awareness, create organizational change, and provide support for the University's commitment to diversity.

OEOD is located in 103 Multipurpose Science and Technology Building; telephone (949) 824-5594 (voice), 824-7593 (TDD); e-mail: oeod@uci.edu; http://www.oeod.uci.edu. See the *Catalogue's* Appendix for UCI's Nondiscrimination Policy Statements and Sexual Harassment and Consensual Relationships Policies.

Office of the University Ombudsman

The Office of the University Ombudsman receives complaints, concerns, or problems that students, faculty, staff, and visitors may encounter on the UC Irvine campus. The office is an informal resource. Users of the office are provided a confidential place to explore options to make informed decisions. When appropriate, the office will initiate an informal intervention with the goal of facilitating or negotiating a resolution that is acceptable to all parties involved.

The Ombudsman acts as an independent, impartial, and confidential problem solver. The office advocates for fairness and equity. If a matter cannot be resolved through the office, the appropriate referral will be made. The Office of the Ombudsman does not replace or substitute for formal grievance, investigative, or appeals processes made available by the University. The office does not have the authority to make decisions or decide policy. However, the office can elevate legitimate matters or concerns to decision makers when appropriate. In addition, the Ombudsman can make recommendations regarding policy review and change as appropriate.



The Office of the Ombudsman also manages the Campus Mediation Program which provides alternative dispute resolution services to the campus and UC Irvine Medical Center communities. The office is located in 205 Multipurpose Science and Technology Building; telephone (949) 824-7256. For more information about the office, visit http://www.ombuds.uci.edu and http://www.mediate.uci.edu.

The Campus Setting

UCI's location combines the cultural and economic resources of an urban area with access to Southern California's spectrum of recreational, scenic, and entertainment venues.

Fifty miles south of Los Angeles, five miles from the Pacific Ocean, and nestled in 1,474 acres of coastal foothills, UCI lies amid rapidly growing residential communities and the dynamic international business environment of Orange County and the surrounding region.

The famed sailing and surfing beaches of Newport, Laguna, and Huntington are a short bike ride from campus, while hiking trails, desert camping, or mountain resorts for snow boarding and skiing are within two-hour's travel distance from Irvine. The campus itself is a natural arboretum of native species, as well as trees and shrubs from all over the world. Adjacent to the campus, the San Joaquin Marsh serves as a natural classroom or peaceful refuge, with trails for viewing the rich diversity of wildlife.

A full roster of intramural sports and recreation events helps to fill the daily fitness needs of students, along with UCI's Anteater Recreation Center. This 115,000-square-foot, state-of-the-art facility includes a pool, gymnasiums, racquetball courts, weight room, and jogging track. UCI is also an NCAA Division I campus that competes in men's and women's intercollegiate athletics.

Across Campus Drive, and linked by a pedestrian bridge, an area of shops and restaurants also features a movie theatre complex, post office, and other services. Complementing UCI on-campus sports and cultural events throughout the year is the vigorous Orange County arts and entertainment environment. It offers everything from small venues for bands and performers to galleries, museums, the Irvine Barclay Theatre, Orange County Performing Arts Center, and South Coast Repertory. And within a one- to two-hour drive are the metropolitan attractions of Los Angeles and San Diego.

With plenty of land for growth, UCI is building to accommodate greater numbers of students, as well as to provide the most updated classroom and laboratory space. Current projects include Sue and Bill Gross Hall, with stem cell-focused research, office, clinical and lecture hall space; the Media Arts building, with planned studio, theatre, and rehearsal areas; and the Medical Education building, the new hub of all educational activities for UCI medical students. On the west campus, the 180-acre University Research Park (URP) attracts businesses that want to access the resources of a major research university and form strategic partnerships. URP companies interact with UCI's academic programs, enhance the region's reputation as a center for advanced technology, and contribute to an educated workforce.

Due to the high caliber of UCI faculty and scholarship, the campus is home to national organizations including the National Fuel Cell Research Center and is a major site for the nationwide cancer genetics research network. For its range of services and research, UCI's Chao Family Comprehensive Cancer Center is the county's only cancer facility designated "comprehensive" by the National Cancer Institute. UCI is noted, in fact, for its strengths in cancer and neuroscience research, much of which takes place at the University of California, Irvine Medical Center. Located in the city of Orange, 13 miles to the north, the medical center is the primary teaching and research hospital for the UC Irvine School of Medicine.

Bus transportation makes travel convenient between the campus, medical center, and major housing areas, shopping centers, and recreation locales. In addition, the campus and surrounding communities are designed for bicycle traffic with trails connecting UCI with student housing and the coast.

CELEBRATE UCI

UCI's thirty-third annual open house, one of the campus's oldest and most festive traditions, will be held on Saturday, April 16, 2011, from 10 a.m. to 4 p.m. Celebrate UCI is a spring event that features an Earth Day celebration, academic information, classic car show, campus tram tours, Wayzgoose Medieval Faire with food booths, demonstrations, rides, games, and much more. General campus offices such as Housing, Admissions and Relations with Schools, and Financial Aid and Scholarships are also open. The event is an excellent opportunity to bring family and friends to see what's new at UCI and join the alumni, staff, faculty, and students to Celebrate UCI! Events and parking are free. For more information, call (949) 824-5182 or visit http://www.uci.edu/celebrate.

Instructional and Research Facilities

UCI LIBRARIES

http://www.lib.uci.edu/
(949) 824-6836

Established in 1963 as one of the founding academic units on campus, the UCI Libraries bring people together to facilitate the creation and sharing of new knowledge in all disciplines across campus. The Libraries support the research information needs of students, faculty, staff, and community members through the Libraries' Web site and at four library facilities: the Langson Library, the Science Library, and the Libraries Gateway Study Center on the UCI campus, and the Grunigen Medical Library in Orange. The UCI Libraries offer in electronic and print formats over 3.2 million volumes, 54,000 serial titles, and substantial collections of manuscripts and visual materials.

ANTPAC (the Libraries' online catalog) provides information about electronic and print books, periodicals, and other library materials at UCI. My ANTPAC provides a wide variety of personalized electronic services such as automatic customized searches and online renewals. Document Delivery Service (DDS) is another popular personalized service for delivery and pickup of UCI

Libraries and Interlibrary Loan (ILL) books at no charge and photocopies with the use of a recharge account. The Next Generation MELVYL® Catalog, via the UCI Libraries Web site (http://www.lib.uci.edu), connects with the vast collections of the University of California library system and with global resources. Expedited loans and digital desktop delivery services facilitate exchange of valuable research materials between the UC libraries, and traditional interlibrary loan services open the scholarly resources of the world to the campus community.

The UCI Libraries provide expert research assistance and conduct an active campuswide research consultation and instruction program to develop students' research and lifelong learning skills, and assist researchers to effectively utilize rapidly changing information resources and technologies. Reference services are available 24 hours a day, seven days a week via the UC-wide collaborative system which is linked with reference librarians worldwide. Nearly 63,000 personalized, one-on-one research consultations were conducted, and close to 20,000 students attended library training sessions last year. A series of online "LibGuides" recommend research resources for various subjects and courses (http://libguides.lib.uci.edu/).

Wireless access and 615 desktop and laptop computers are available for general use in the four library buildings. The Langson Library features a state-of-the-art Multimedia Resources Center (MRC at http://mrc.lib.uci.edu) with multimedia production software and video equipment, and a Technology-Enhanced Classroom (TEC) for hands-on learning. The Science Library features the Interactive Learning Center (ILC at http://ilc.lib.uci.edu) also with a computer classroom. The Grunigen Medical Library provides two computer technology facilities featuring an instructional laboratory and an Information Technology Center (ITC at http://itc.lib.uci.edu). A copy card system is used for photocopies and printing from networked public work stations in all library buildings.

The Libraries Gateway Study Center, adjacent to the Langson Library, and the Science Library Study Center provide comfortable individual and group study areas. The Libraries Gateway Study Center also offers late-night study hours until 3 a.m. during the quarter, and 24 hours a day during prefinals and finals weeks.

Reserve Services offers access to both supplemental electronic and print materials selected by the faculty for individual courses.

Langson Library supports research and instruction in the arts, humanities, social sciences, education, and business and management. Assistive technology and study aids for students are supported through UCI's Disability Services Center.

The Department of Special Collections and Archives in the Langson Library holds non-circulating collections of rare books, archives, manuscripts, photographs, maps, and pamphlets, including the Regional History Collections, emphasizing Orange County; the Southeast Asian Archive; the Critical Theory Archive; the Dance and Performing Arts Collections; the personal papers of distinguished UCI faculty, including Nobel Laureates; and the University Archives.

The Science Library supports research and instruction in science, medicine, and technology. More than 2,000 individual study spaces, faculty and graduate reading rooms, 50 group study rooms, and a late-night study center are available.

The Grunigen Medical Library is located at the UCI Medical Center in Orange, and serves the information and research needs of the medical center and the teaching needs of the School of Medicine.

OFFICE OF INFORMATION TECHNOLOGY

The Office of Information Technology (OIT) provides telephone, network, and computing services in support of research, administration, and education at UCI. OIT provides central computing services, computer laboratories, departmental and research-group support services, business application support, and campuswide technical coordination. The campus network infrastructure maintained by OIT provides connectivity on campus and to the Internet. Wireless and mobile wired network access is available in select areas of the campus as part of the UCInet Mobile Access project.

UCI's Electronic Educational Environment (EEE) is a campuswide collaboration including OIT, the Office of the Registrar, the UCI Libraries, and the Division of Undergraduate Education. As part of EEE, OIT builds and maintains Web-based instructional tools and resources for instructors and students including course Web site space, course mailing lists, and instructional technology training. OIT maintains the EEE Web site located at http://eee.uci.edu/. OIT also provides UCI Replay (replay.uci.edu), an audio/screen capture service for instructors, employees, and departments to easily record classes, presentations, or instructional vignettes on a PC or Mac computer.

OIT provides e-mail accounts for faculty, staff, and students. The Webmail service (webmail.uci.edu) is provided as one option for accessing these accounts. Faculty and staff are provided interactive Unix accounts on the server shell.nacs.uci.edu.

OIT provides Webfiles (webfiles.uci.edu), a network file-sharing service for faculty, staff, and graduate students.

Approximately 70 MS-Windows computers are available 24 hours a day in computer laboratories on the first floor of the Engineering Gateway building. All common MS-Windows applications are available, as well as certain mathematical software and statistics packages. Computer peripherals including scanners and printers are available. While school is in session, NACS student consultants are on duty in Room E1140 to provide assistance to those using the facilities.

An additional 96 Windows computers are located in the Multipurpose Science and Technology (MST) Building, and are available for drop-in use when not scheduled for classes. OIT also operates "OIT@HIB," a drop-in instructional laboratory in the Humanities Instructional Building. This laboratory has 30 Windows computers and is open to students of any major. Forty-four stations are available for drop-in use at the Student Center, and a few more are in the Cross-Cultural Center. Finally, OIT co-administers computer labs in the Gateway Study Center, the ArtsTEC laboratory in the Claire Trevor School of the Arts, and the Instructional Technology Center (ITC) in Social Sciences Tower.

OIT offers a variety of additional services. For more information see the OIT Web site at http://www.oit.uci.edu/. Offices are located in 242 Multipurpose Science and Technology Building, the modular buildings in Lot 16, and in the University Research Park, 5201 California, Suite 150. The OIT Help Desk may be reached by sending e-mail to oit@uci.edu or by calling (949) 824-2222 or (949) 824-8500.

UCI ECOLOGICAL PRESERVE

The 60-acre UCI Ecological Preserve consists of several small hills and surrounding flatlands bearing remnants of coastal sage scrub flora and associated fauna. The Preserve is located on the campus and is set aside for teaching, research, and use by the campus community. Additional information is available from the Office of Natural Reserves at (949) 824-6031. Publications and species lists are available at http://nrs.ucop.edu.

NATURAL RESERVE SYSTEM

The University of California manages and maintains a system of 34 Reserves that are representative of the State's habitat and geographic diversity. These serve as outdoor classrooms and laboratories for students, faculty, and staff, and are intended primarily for purposes of education and research. For further information about the Natural Reserve System, visit http://nrs.ucop.edu.

UCI has primary responsibility for two Reserves: the San Joaquin Marsh Reserve and the Burns Piñon Ridge Reserve. Additional information is available from the Manager at (949) 824-6031.

San Joaquin Marsh Reserve

The San Joaquin Marsh Reserve, one of the last remaining marshes in Southern California, is a 202-acre wetland adjacent to the UCI campus. The Marsh consists of a series of freshwater ponds and their attendant aquatic flora and fauna, and is especially known for its rich bird life, both resident and migratory. Researchers and observers have recorded 263 species of birds in the Reserve, a major stopping point on the Pacific Flyway. For further information, visit http://nrs.ucop.edu.

Burns Piñon Ridge Reserve

The Burns Piñon Ridge Reserve is located near the town of Yucca Valley in San Bernardino County. It is a 306-acre parcel of high-desert habitat representing an ecotone between montane and desert biota, with mixtures of Joshua tree, piñon pine, and juniper woodland. The Reserve has a dormitory and research station, as well as primitive camping facilities, and is used primarily for overnight field trips and research by faculty and students from the School of Biological Sciences. For further information, visit http://nrs.ucop. edu.

UCI ARBORETUM

The UCI Arboretum is a botanical garden developed and managed by the School of Biological Sciences. It contains areas planted with floras adapted to climates similar to those of Southern California. The Arboretum maintains a large collection of plants native to Southern California and Baja California as well as South African monocots. The Arboretum provides materials and space for research and teaching needs and its collections are also used as an educational resource for the community at large. Volunteers and other interested parties are encouraged to participate in Arboretum activities. The Arboretum is open to the public 9 a.m. to 3 p.m., Monday through Saturday; call (949) 824-5833 for additional information.

LASER MICROBEAM AND MEDICAL PROGRAM

The Laser Microbeam and Medical Program (LAMMP), is a Biomedical Technology Research Center supported by the National Center for Research Resources at the National Institutes of Health. Located within the Beckman Laser Institute and Medical Clinic at UCI, LAMMP is dedicated exclusively to the use of lasers and optics in biology and medicine. LAMMP supports activities in technological research and development, collaborative research, and training/dissemination. LAMMP research and technology development is based on fundamental light-tissue interaction mechanisms. The LAMMP program also emphasizes "translational" research by rapidly moving basic science and technology from "benchtop to bedside." Additional information is available online at http://lammp.bli.uci.edu/ and from the LAMMP coordinator at (949) 824-5633.

UNIVERSITY OF CALIFORNIA, IRVINE HEALTHCARE

UC Irvine Healthcare, the clinical entity of UC Irvine, is committed to providing the highest quality healthcare to Orange County and surrounding communities through UC Irvine Medical Center.

UC Irvine Medical Center is the county's only university hospital and features more than 600 specialty and primary care physicians. The medical center offers a full scope of acute- and general-care services including cardiac surgery, cancer, digestive disease, neurosurgery, and trauma. It is recognized in *U.S. News & World Report's* annual listing of "America's Best Hospitals" for its programs in urology and gynecological services and was only the third hospital in California and the first hospital in Orange County to receive Magnet Designation for nursing excellence.

Located in the city of Orange, 13 miles from the UC Irvine campus, UC Irvine Medical Center has 422 beds and is the principal clinical facility for the teaching and research programs of the UC Irvine School of Medicine. As part of its focus on family and preventive health, the medical center has additional patient care locations in Anaheim, Irvine, the UC Irvine campus, and Santa Ana.

UC Irvine Medical Center houses a 24-hour emergency department and is designated as Orange County's only Level I Trauma Center—the most comprehensive for the treatment of life-threatening injuries. Specialists at UC Irvine Medical Center are available for the expert management of high-risk pregnancies, and critically ill newborns are cared for in the county's most sophisticated Level III neonatal care unit.

The hospital is also home to the Chao Family Comprehensive Cancer Center, the only facility in Orange County designated as a comprehensive cancer center by the National Cancer Institute. It offers patients a full range of cancer therapies and research programs, including laser and radiation therapy, endoscopic ultrasound, and immunotherapy.

In March 2009, UC Irvine Douglas Hospital opened at UC Irvine Medical Center. It includes modern facilities for conducting the latest medical research and training for future and practicing physicians. The seven-story hospital has 236 beds, 19 operating rooms, and interventional procedure rooms. Private patient rooms emphasize individualized patient care and allow family members to stay overnight.

For additional information or to schedule an appointment, call toll free 1 (877) UCI-DOCS or visit http://www.ucihealth.com.

UCI CENTER FOR OCCUPATIONAL AND ENVIRONMENTAL HEALTH

In 1980 the University established occupational health centers in Northern and Southern California for the purpose of training occupational health professionals, conducting research on occupational health issues, and providing clinical evaluation of workers/patients for work-related disease. The Centers have strong ties to the UC Schools of Medicine and Public Health.

The Irvine Center is comprised of UCI health professionals. Faculty research is concerned with identification of causal association between disease and occupational exposure as a basis for prevention of occupational disease and injury. The Center's primary areas are occupational medicine, toxicology, epidemiology, and environmental health sciences, and it houses a referral clinic, facilities for research and teaching in industrial hygiene and toxicology, and study space for residents in occupational medicine and other graduate students. For additional information, call (949) 824-8641.

ADDITIONAL FACILITIES

Information about many other UCI research and instructional facilities and programs is available in the academic unit sections and the Office of Research section of this *Catalogue,* as well as online at http://www.uci.edu/academics_research.php.

University Advancement

University Advancement is responsible for creating awareness, building relationships, and generating support for UCI's teaching, research, and public service missions. This is accomplished through strategic efforts made by University Advancement's "Centers of Excellence," which include marketing, alumni relations, community and government relations, development, and resource planning and administration. These combined efforts provide a bridge between the University and the community, promoting a climate of understanding, access, and support. For additional information, contact University Advancement at (949) 824-8696 or visit http://www.uadv.uci.edu.

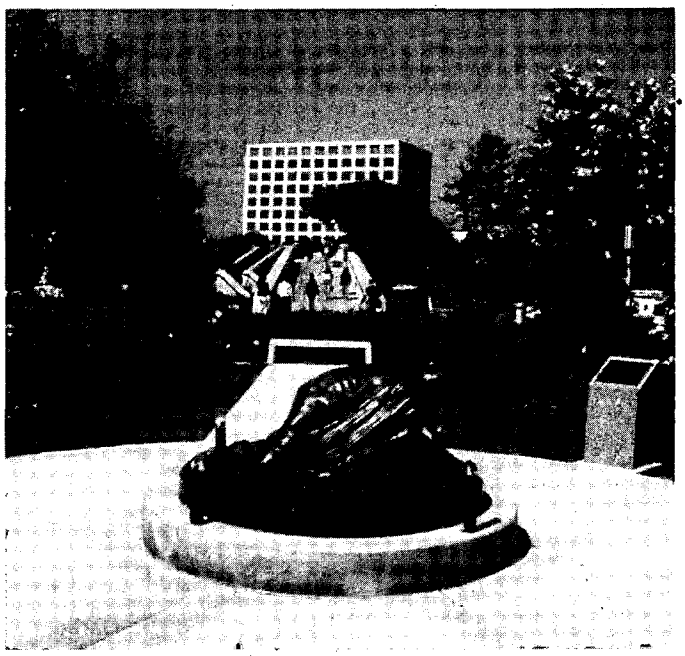
The Office of Marketing supports and promotes the University's comprehensive campaign and overall Advancement efforts significantly increasing the University's visibility and recognition on regional, national, and international levels. Through its efforts, the marketing office increases engagement and private support for UC Irvine to help it continue its advancement into the elite ranks of top national universities. For additional information, contact the Marketing Office at (949) 824-9828.

The Office of Alumni Relations and the UCI Alumni Association are committed to enriching the lives of alumni and engaging them in lifelong advancement of the University. UCI's more than 117,000 alumni have had a tremendous impact within the spheres of science, art, literature, politics, business, education, and beyond. Notable alumni include creator of the http protocol, Roy Fielding (Ph.D. '91); Pulitzer Prize-winning author Michael Chabon (M.F.A. '87); four-time Olympic Gold Medalist Greg Louganis ('83); and educator Erin Gruwell ('91) who founded the Freedom Writers Foundation. Many alumni give their time and resources to their alma mater by providing financial contributions, returning to campus as speakers, and volunteering to serve on various boards and committees. For additional information, contact the UCI Alumni Association at (949) 824-ALUM.

The Office of Community and Government Relations is responsible for enhancing public understanding and support of UCI and the University of California. The program works to ensure that the University's mission and legislative and budgetary objectives are given due consideration by elected officials and the general public. Community and Government Relations provides leadership for building effective and enduring relationships with community leaders, public policy makers, and other members of the public to increase the visibility and prominence of UCI's research, teaching, and service mission. For additional information, contact Community and Government Relations at (949) 824-0061.

In an era of decreasing State support to the University of California, the importance of private support is greater than ever. The Office of Development, in conjunction with the University of California, Irvine Foundation, raises more than $100 million in private funds annually from individuals, corporations, and foundations for the University. UCI's development program works hand-in-hand with UCI schools and units to secure philanthropic gifts to support the mission and vision of the University. In 2008, the campus launched a $1-billion "Shaping the Future" campaign for this purpose. In addition, numerous support groups offer affiliation with academic units, athletics, and student programs. For additional information, contact the Office of Development at (949) 824-1113.

The Resource Planning and Administration office is the operations management arm of the University Advancement division. In addition to being responsible for a number of internal functions, this office oversees the advancement services functions of prospect research, prospect management, and gift administration, which provide operational support to all University Advancement program



areas. This office is also responsible for the financial management of the University of California, Irvine Foundation's assets. For additional information, contact the Resource Planning and Administration office at (949) 824-4166.

University Communications

The Office of University Communications leads efforts to promote UC Irvine's mission, priorities, and values; raise awareness of its achievements, accomplishments, and cultural events; and increase the involvement and support of its internal and external communities through regular communications to target audiences.

Through partnerships with campus units designed to maximize University resources, University Communications spearheads an integrated strategic communications effort involving:

Electronic and Print Communications: UC Irvine home page (http://www.uci.edu), UC Irvine Today (http://www.today.uci.edu), the Chancellor's Web site (http://www.chancellor.uci.edu), Zot!Wire (http://www.zotwire.uci.edu), UCi brief, ZotZine (http://www.zotzine.uci.edu), special interest/issue Web sites, the annual Facts & Figures brochure and fact card, and campus map brochures.

Media Relations: Identifying/placing in local, national, and international media high-impact news stories on UCI research, scholarship, and public service activities; issues management/crisis communications; and media training.

Visual Communications: Production of videos, photography, and multimedia content for University Web sites; video production/editing services for campus units; and on-camera coaching.

UC Irvine Health Marketing and Communications: Marketing strategy, advertising, publications, Web sites, internal communications, and speakers bureau; and marketing and communications consulting for healthcare/health sciences units.

For information call (949) 824-6922.

UCI ACADEMIC SENATE DISTINGUISHED FACULTY



KENNETH L. POMERANZ

Distinguished Faculty Award for Research, 2009–10

UCI Chancellor's Professor of History



VICTORIA BASOLO

Distinguished Mid-Career Faculty Award for Service, 2009–10

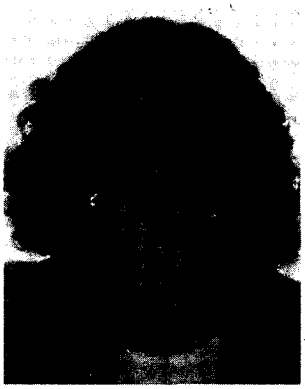
Associate Professor of Planning, Policy, and Design



MARIA Q. FENG

Distinguished Mid-Career Faculty Award for Research, 2009–10

Endowed Chair and Director of the Center for Diversity in Engineering Education, and Professor of Civil and Environmental Engineering and of Electrical Engineering and Computer Science



LINDA J. LEVINE

Distinguished Faculty Award for Teaching, 2009–10

Associate Professor of Psychology and Social Behavior



STANISLAW M. JARECKI

Distinguished Assistant Professor Award for Research, 2009–10

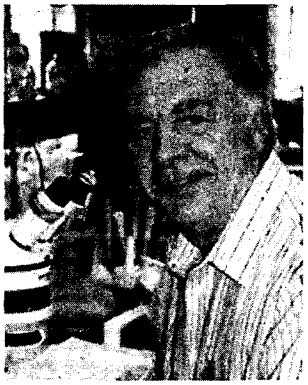
Associate Professor of Computer Science



MARCELO A. WOOD

Distinguished Assistant Professor Award for Teaching, 2009–10

Assistant Professor of Neurobiology and Behavior



TIMOTHY J. BRADLEY

Daniel G. Aldrich, Jr. Distinguished University Service Award, 2009–10

Professor of Ecology and Evolutionary Biology

More information about the Academic Senate Distinguished Faculty is available at http://www.senate.uci.edu. Click on "Distinguished Faculty Awards."

PREADMISSION MATTERS

OFFICE OF ADMISSIONS AND RELATIONS WITH SCHOOLS

The mission of the Office of Admissions and Relations with Schools (OARS), a division of Student Affairs, is to (1) optimize UCI's undergraduate enrollments by implementing Academic Senate, universitywide, and campus policies for the selection and admission of new freshman and transfer students; and (2) stimulate and advance cooperative educational relationships between UCI and California schools and colleges. OARS works to improve the preparation of prospective students for higher education and to promote their access to and success at UCI.

Additional information about the services listed below is available online at http://www.admissions.uci.edu/ or by calling OARS at (949) 824-6703.

Undergraduate Admissions

Staff are involved in monitoring applications and admission targets, in collecting and evaluating personal and academic data to select and admit new undergraduate students, in establishing students' permanent UCI academic record, and in evaluating for transfer credit course work taken in other colleges and universities by new and continuing students.

Intersegmental Relations

Staff are involved as liaison with regard to curricular articulation between UCI and California community colleges as well as various educational organizations designed to facilitate regional cooperation (South Coast Higher Education Council, Southern California Intersegmental Articulation Council).

School and College Relations

Staff (1) advise prospective students, their parents, teachers, counselors, and school administrators regarding academic programs, admission requirements, and admission selection, and assist them with UC application and enrollment processes; (2) increase public awareness by making presentations to schools, colleges, and the community regarding UCI and the University of California, and by creating publications which explain admissions policies and procedures, academic options, housing, financial aid, and student life opportunities; (3) provide general information on UC admissions and programs for all UC campuses; (4) explain University Admissions policies and procedures specific to undergraduate enrollment to the public; (5) assist prospective transfer students and community college faculty and staff; and (6) participate in activities and projects designed to enhance the academic success of students.

On-Campus Services

Staff (1) host programs for prospective students and educational groups; (2) offer activities for applicants such as Discover UC Irvine; (3) maintain an honors outreach program for high-achieving prospective UCI students; (4) inform UC and UCI administrators and faculty of developments in California schools and community colleges; and (5) provide consultative services to campus departments wishing to provide programs for schools and colleges or special recruitment for specific majors or programs.

Transfer Student Services

OARS' Transfer Student Services (TSS) provides advice and guidance to prospective UCI transfer students. Staff regularly visit California community colleges throughout the state and meet with prospective transfer students to discuss admission requirements, academic planning and preparation, and UCI lower-division major and general education requirements. Articulation agreements, which identify how community college courses may be used to fulfill lower-division UCI degree requirements, are facilitated through TSS. Articulation agreements are available online at http://www.assist.org/.

CAMPUS TOURS

Student-led tours of the campus are conducted weekdays at noon, except during academic recesses; Saturday tours are offered during October, November, and April only. Tours begin at the UC Irvine Visitor Center, located on the first floor of the Student Center, across from the Student Center parking structure. To confirm tour dates, times, and parking instructions and to arrange tours for school groups of 10 or more during the regular academic year, call (949) 824-4636 or visit http://www.campustours.uci.edu.

HOW TO USE THE CATALOGUE

Because the *UCI General Catalogue* must be prepared well in advance of the year it covers, changes in some programs and courses inevitably will occur. The selection of courses to be offered each quarter is subject to change without notice, and some courses are not offered each year. The *Schedule of Classes,* available on the Registrar's Web site at http://www.reg.uci.edu shortly before registration begins each quarter, provides current information about course offerings, instructors, hours, and more. Students should consult the appropriate academic unit for even more up-to-date information. (Admission to UCI does not guarantee enrollment in any particular course.)

Presentation of information in the *Catalogue* is divided into six main concepts, as detailed in the Table of Contents: (1) Introduction to UCI, (2) Preadmission Matters, (3) Information for Admitted Students, (4) Research, (5) Graduate Division, and (6) Academic Programs. Included in the academic program sections are the following kinds of information: (a) brief descriptions of the areas that are covered in each school or program and a brief statement of the educational philosophy and orientation of the unit; (b) lists of faculty members; (c) requirements for undergraduate majors, minors, and graduate degrees; (d) additional areas of study referred to as concentrations, specializations, or emphases; (e) advice about planning a program of study, and other information relevant to the academic progress and experience of students majoring in fields within each school or program; and (f) courses offered.

Course Listings

Undergraduate courses are classified as lower-division (numbered 1–99) and upper-division (numbered 100–199). Courses numbered 200 and above are graduate or professional courses. Lower-division usually refers to freshman-sophomore courses, upper-division to junior-senior courses. However, junior and senior students may take lower-division courses, and freshmen and sophomores may normally take upper-division courses when upper-division standing is not a prerequisite and when any other prerequisites have been met. A course has no prerequisites unless indicated.

Courses with sequential designations (for example, 1A-B-C) normally indicate multiple-quarter courses; *except as noted, each course in a sequence is prerequisite to the one following.* The letter L following a number usually designates a laboratory course. The letter H preceding a number designates an honors course.

The (4) or (4-4-4) designation following the course title indicates the quarter unit credits toward graduation. Some courses give other than

UNDERGRADUATE AND GRADUATE DEGREES

Degree Title	Degree[1]
Aerospace Engineering	B.S.
African American Studies	B.A.
Anthropology	B.A., M.A.[2], Ph.D.
Art History	B.A.
Arts and Humanities	B.A.
Asian American Studies	B.A.
Biochemistry and Molecular Biology	B.S.
Biological Sciences	B.S., M.S.[4], Ph.D.
Biomedical Computing	B.S.
Biomedical Engineering	B.S., M.S., Ph.D.
Biomedical Engineering: Premedical	B.S.
Business Administration	B.A., M.B.A.
Business Economics	B.A.
Business Information Management	B.S.
Chemical and Biochemical Engineering	M.S., Ph.D.
Chemical Engineering	B.S.
Chemistry	B.S., M.S.[2, 5], Ph.D.
Chicano/Latino Studies	B.A.
Chinese Studies	B.A.
Civil Engineering	B.S., M.S., Ph.D.
Classical Civilization	B.A.
Classics	B.A., M.A.[2], Ph.D.[6]
Comparative Literature	B.A., M.A.[2], Ph.D.
Computer Engineering	B.S.
Computer Game Science	B.S.
Computer Science	B.S., M.S., Ph.D.
Computer Science and Engineering	B.S.
Criminology, Law and Society	B.A., M.A.S., Ph.D.
Culture and Theory	M.A.[2], Ph.D.
Dance	B.A., B.F.A., M.F.A.
Developmental and Cell Biology	B.S.
Drama	B.A., M.F.A.
Drama and Theatre	Ph.D.[7]
Earth and Environmental Sciences	B.S.
Earth and Environmental Studies	B.A.
Earth System Science	M.S.[2], Ph.D.
East Asian Cultures	B.A.
East Asian Languages and Literatures	M.A.[2], Ph.D.
Ecology and Evolutionary Biology	B.S.
Economics	B.A., M.A.[2], Ph.D.
Education	Credential Programs
Education	M.A.[2], Ph.D.
Educational Administration and Leadership	Ed.D.[8]
Electrical and Computer Engineering	M.S., Ph.D.
Electrical Engineering	B.S.
Elementary and Secondary Education	M.A.T.
Engineering	B.S., M.S., Ph.D.
English	B.A., M.A.[2], M.F.A., Ph.D.
Environmental Engineering	B.S.
Environmental Health Science and Policy	M.S.[3], Ph.D.[3]
Environmental Toxicology	M.S., Ph.D.
European Studies	B.A.
Film and Media Studies	B.A.
Fine Arts	M.F.A.
French	B.A., M.A.[2], Ph.D.
Genetic Counseling	M.S.
Genetics	B.S.
German	M.A.[2], Ph.D.
German Studies	B.A.
Global Cultures	B.A.
History	B.A., M.A., Ph.D.
Humanities and Arts	B.A.
Informatics	B.S.
Information and Computer Science	B.S., M.S., Ph.D.
International Studies	B.A.
Japanese Language and Literature	B.A.
Korean Literature and Culture	B.A.
Latin	B.A.
Law	J.D.
Literary Journalism	B.A.
Management	M.S.[2], Ph.D.
Materials Science and Engineering	M.S., Ph.D.
Materials Science Engineering	B.S.
Mathematics	B.S., M.S.[5], Ph.D.
Mechanical and Aerospace Engineering	M.S., Ph.D.
Mechanical Engineering	B.S.
Medicine	M.D.
Microbiology and Immunology	B.S.
Music	B.A., B.Mus., M.F.A.
Music Theatre	B.F.A.
Networked Systems	M.S., Ph.D.
Neurobiology	B.S.
Nursing Science	B.S., M.S.
Pharmaceutical Sciences	B.S.
Pharmacology and Toxicology	M.S.[2], Ph.D.
Philosophy	B.A., M.A.[2], Ph.D.
Physics	B.S., M.S.[2], Ph.D.
Planning, Policy, and Design	Ph.D.
Plant Biology	B.S.
Political Science	B.A., M.A.[2], Ph.D.
Psychology	B.A., M.A.[2], Ph.D.
Psychology and Social Behavior	B.A., Ph.D.
Public Health	M.P.H.
Public Health Policy	B.A.
Public Health Sciences	B.S.
Quantitative Economics	B.A.
Religious Studies	B.A.
Social Ecology	B.A., M.A., Ph.D.
Social Science	B.A., M.A.[9], Ph.D.
Sociology	B.A., M.A.[2], Ph.D.
Spanish	B.A., M.A., Ph.D.
Statistics	M.S., Ph.D.
Studio Art	B.A., M.F.A.
Transportation Science	M.S., Ph.D.
Urban and Regional Planning	M.U.R.P.
Urban Studies	B.A.
Visual Studies	M.A.[2], Ph.D.
Women's Studies	B.A.

[1] Degrees: B.A. = Bachelor of Arts; B.F.A. = Bachelor of Fine Arts; B.S. = Bachelor of Science; B.Mus.= Bachelor of Music; Ed.D. = Doctor of Education; J.D. = Juris Doctor; M.A. = Master of Arts; M.A.S. = Master of Advanced Study; M.A.T. = Master of Arts in Teaching; M.B.A. = Master of Business Administration; M.F.A. = Master of Fine Arts; M.P.H. = Master of Public Health; M.S. = Master of Science; M.D. = Doctor of Medicine; M.U.R.P. = Master of Urban and Regional Planning; Ph.D. = Doctor of Philosophy. Titles of degrees may not correspond exactly with specific fields of study offered; see the Index and the academic unit sections for information.

[2] Emphasis at the graduate level is on the Ph.D. degree; the master's degree may be awarded to Ph.D. students after fulfillment of the requirements.

[3] Admission to this program is no longer available.

[4] Emphasis at the graduate level is on the Ph.D. degree; the M.S. degree may be awarded to Ph.D. students after fulfillment of the requirements. However, students may apply directly to the M.S. concentration in Biotechnology and in Ecology and Evolutionary Biology.

[5] In addition to the regular M.S. degree program, a program coordinated with the Department of Education leads to an M.S. degree and a Teaching Credential.

[6] UCI, UCR, and UCSD joint program.

[7] UCI and UCSD joint program.

[8] UCI and CSU Fullerton, Long Beach, Los Angeles, and Pomona joint program; admission is no longer available.

[9] Emphasis at the graduate level is on the Ph.D. degree; the M.A. degree may be awarded to Ph.D. students after fulfillment of the requirements. However, an M.A. in Social Science (concentration in Demographic and Social Analysis or in Mathematical Behavioral Sciences) is available.

NOTE: A list of inactive degree programs is available in the Appendix.

four units of credit; for example, two, five, or a range from one to 12. The notations F, W, S, and Summer indicate when the course will be offered: fall, winter, or spring quarter, or summer session.

When a course is approved for satisfaction of the UCI general education requirement, the general education category is indicated by a Roman numeral in parentheses at the end of the description. However, courses which have been approved to fulfill the upper-division writing requirement are *not* designated in this *Catalogue.* Rather, they are designated in the quarterly *Schedule of Classes* with a W following the number. Students should refer to the *Schedule of Classes* link on the Registrar's Web site, http://www.reg.uci.edu, for the approved upper-division writing courses offered each quarter.

UNDERGRADUATE MAJORS, MINORS, AND ASSOCIATED AREAS OF STUDY

Students are urged to become informed of and understand all requirements concerning their intended majors, minors, and associated areas of study. Special restrictions apply to some majors and minors; for example, some minors require formal application or declaration by students, others may be completed without such formalities. Information about the programs listed below may be found in the academic unit sections of the *Catalogue.*

Undergraduate majors are offered in all of the bachelor's degree programs on the list of degree titles; the degree programs are referred to as majors in the following list. In association with these majors, UCI offers a number of minors, concentrations, specializations, and emphases.

A **minor** consists of a coordinated set of seven or more courses (28–40 units) which together take a student well beyond the introductory level in an academic field, subject matter, and/or discipline but which are not sufficient to constitute a major. An **interdisciplinary minor** consists of courses offered by two or more departments, schools, or programs. Generally, all minors are available to all students, with the following exceptions: (1) students may not minor in their major, and (2) students may not complete certain other major/minor combinations that are expressly prohibited, as noted in the *Catalogue.* Minors are listed on a student's transcript but not on the baccalaureate diploma.

A **concentration** is a program of interdisciplinary study consisting of courses offered by two or more schools or programs. Concentrations are similar to minors in that they require fewer units of work than majors do, and the area of concentration appears on the student's transcript but not on the baccalaureate diploma. Concentrations are taken in combination with a major in one of the schools or programs offering the concentration.

A **specialization** is a program of study which enables students to focus on courses in a particular field within a major. The area of specialization pursued appears on the student's transcript but not on the baccalaureate diploma.

An **emphasis** is a program of study within a major which emphasizes a specific area of the discipline. Emphases usually have a defined course of study and are not listed on the transcript nor on the baccalaureate diploma.

In addition, the Campuswide Honors Program, various major-specific honors programs, and Excellence in Research programs are available. See the Division of Undergraduate Education section for information.

CLAIRE TREVOR SCHOOL OF THE ARTS

Majors:
- Arts and Humanities, B.A.
- Dance, B.A. or B.F.A.
  - Specializations (B.F.A. only):
    - Choreography
    - Performance
- Drama, B.A.
- Music, B.A. or B.Mus.
  - Emphases (B.A. only):
    - Composition
    - Music History
    - Music Theory
    - Performance
  - Specializations (B.Mus. only):
    - Guitar and Lute Performance
    - Instrumental Performance
      - Bassoon
      - Clarinet
      - Double Bass
      - Flute
      - Horn
      - Oboe
      - Percussion
      - Trombone
      - Trumpet
      - Tuba
      - Viola
      - Violin
      - Violoncello
    - Jazz Studies
      - Bass
      - Percussion
      - Piano
      - Saxophone
      - Trombone
      - Trumpet
    - Piano Performance
    - Vocal Performance
- Music Theatre, B.F.A.
- Studio Art, B.A.
  - Concentration: Game Culture and Technology (available to currently enrolled students majoring in Studio Art, Computer Science, Informatics, or Information and Computer Science)

Minors:
- Digital Arts
- Studio Art

Concentration: Medieval Studies (in combination with any major in the Claire Trevor School of the Arts or the School of Humanities)

SCHOOL OF BIOLOGICAL SCIENCES

Majors:
- Biochemistry and Molecular Biology, B.S.
- Biological Sciences, B.S.
- Developmental and Cell Biology, B.S.
- Ecology and Evolutionary Biology, B.S.
- Genetics, B.S.
- Microbiology and Immunology, B.S.
  - Specializations:
    - Immunology
    - Microbiology
    - Virology
- Neurobiology, B.S.
- Plant Biology, B.S.

Concentration: Biological Sciences Education

Minor: Biological Sciences

THE PAUL MERAGE SCHOOL OF BUSINESS

Majors:
- Business Administration, B.A.
  - Specializations:
    - Accounting
    - General Management
    - Marketing
- Business Information Management, B.S. (offered jointly with the Donald Bren School of Information and Computer Sciences)

Minors:
- Accounting
- Management

DEPARTMENT OF EDUCATION

Cal Teach Science and Mathematics Program (Secondary Teaching Credential certification combined with a major in the School of Physical Sciences)

Minor: Educational Studies

THE HENRY SAMUELI SCHOOL OF ENGINEERING

Majors:
- Aerospace Engineering, B.S.
- Biomedical Engineering, B.S.
  - Specializations:
    - Biophotonics
    - Micro and Nano Biomedical Engineering
- Biomedical Engineering: Premedical, B.S.
- Chemical Engineering, B.S.
  - Specializations:
    - Biochemical Engineering
    - Environmental Engineering
    - Materials Science
- Civil Engineering, B.S.
  - Concentrations:
    - Computer Applications
    - Engineering Management
    - Infrastructure Planning
    - Mathematical Methods
  - Specializations:
    - General Civil Engineering
    - Environmental Hydrology and Water Resources
    - Structural Engineering
    - Transportation Systems Engineering
- Computer Engineering, B.S.
- Computer Science and Engineering, B.S. (offered jointly with the Donald Bren School of Information and Computer Sciences)
  - Tracks:
    - Algorithms
    - Artificial Intelligence
    - Graphics/Vision
    - Parallel and Distributed Computing
- Electrical Engineering, B.S.
  - Specializations:
    - Electro-optics and Solid-State Devices
    - Systems and Signal Processing
- Engineering, B.S.
- Environmental Engineering, B.S.
- Materials Science Engineering, B.S.
  - Specializations:
    - Biomaterials
    - Electronics Processing and Materials
    - Materials and Mechanical Design
- Mechanical Engineering, B.S.
  - Specializations:
    - Aerospace Engineering
    - Energy Systems and Environmental Engineering
    - Flow Physics and Propulsion Systems
    - Design of Mechanical Systems

Concentration:
- Engineering and Computer Science in the Global Context (by approval of the Associate Dean, in combination with any major in The Henry Samueli School of Engineering)

Minors:
- Biomedical Engineering
- Materials Science Engineering

SCHOOL OF HUMANITIES

Majors:
- African American Studies, B.A.
- Art History, B.A.
- Asian American Studies, B.A.
- Chinese Studies, B.A.
  - Emphases:
    - Chinese Culture and Society
    - Chinese Language and Literature
- Classical Civilization, B.A.
- Classics, B.A.
  - Emphases:
    - Greek
    - Latin
- Comparative Literature, B.A.
  - Specialization: Cultural Studies
- East Asian Cultures, B.A.
- English, B.A.
  - Emphasis: Creative Writing
- European Studies, B.A.
  - Emphases:
    - British Studies
    - Early Modern Europe
    - Encounters with the Non-European World
    - French Studies
    - German Studies
    - Italian Studies
    - Medieval Studies
    - The Mediterranean World: Past and Present
    - Modern Europe (1789–Present)
    - Russian Studies
    - Spanish-Portuguese Studies
- Film and Media Studies, B.A.
- French, B.A.
- German Studies, B.A.
- Global Cultures, B.A.
  - Emphases:
    - Hispanic, U.S. Latino/Latina, and Luso-Brazilian Culture
    - Africa (Nation, Culture) and its Diaspora
    - Asias (Nation, Culture) and its Diaspora
    - Europe and its Former Colonies
    - Atlantic Rim
    - Pacific Rim
    - Inter-Area Studies
- History, B.A.
- Humanities and Arts, B.A.
- Japanese Language and Literature, B.A.
- Korean Literature and Culture, B.A.
- Latin, B.A.
- Literary Journalism, B.A.
- Philosophy, B.A.
- Religious Studies, B.A.
  - Emphases:
    - Judaism/Christianity/Islam
    - World Religious Traditions
- Spanish, B.A.
  - Emphases:
    - Cinema: Spain, Latin America, and U.S. Latino
    - Literature and Culture
    - Spanish for Future Teachers

- Women's Studies, B.A.

Minors:
- African American Studies
- Archaeology
- Art History
- Asian American Studies
- Asian Studies
- Chinese Language and Literature
- Classical Civilization
- Comparative Literature
- English
- European Studies
- Film and Media Studies
- French
- German Studies
- Global Cultures
- Greek
- History
- Humanities and Law
- Italian Studies
- Japanese Language and Literature
- Jewish Studies
- Korean Literature and Culture
- Latin
- Latin American and Caribbean Studies
- Philosophy
- Portuguese
- Queer Studies
- Religious Studies
- Russian Studies
- Spanish
- Women's Studies

Concentration: Medieval Studies (in combination with any major in the Claire Trevor School of the Arts or the School of Humanities)

DONALD BREN SCHOOL OF INFORMATION AND COMPUTER SCIENCES

Majors:
- Biomedical Computing, B.S.
- Business Information Management, B.S. (offered jointly with The Paul Merage School of Business)
- Computer Game Science, B.S.
- Computer Science, B.S.
- Computer Science and Engineering, B.S. (offered jointly with The Henry Samueli School of Engineering)
  - Tracks:
    - Algorithms
    - Artificial Intelligence
    - Graphics/Vision
    - Parallel and Distributed Computing
- Informatics, B.S.
  - Specializations:
    - Software Engineering
    - Human-Computer Interaction
    - Organizations and Information Technology
- Information and Computer Science, B.S.
  - Specializations:
    - Artificial Intelligence
    - Computer Systems
    - Implementation and Analysis of Algorithms
    - Information Systems
    - Networks and Distributed Systems
    - Optimization
    - Software Systems

Concentrations:
- Engineering and Computer Science in the Global Context (by approval of the Associate Dean, in combination with any major in the Bren School of ICS)
- Game Culture and Technology (available to currently enrolled students majoring in Computer Science, Informatics, Information and Computer Science, or Studio Art)

Minors:
- Biomedical Computing
- Digital Information Systems
- Informatics
- Information and Computer Science
- Statistics

INTERDISCIPLINARY STUDIES

Majors:
- Business Information Management, B.S. (offered jointly by The Paul Merage School of Business and the Donald Bren School of Information and Computer Sciences)
- Computer Science and Engineering, B.S. (offered jointly by the Donald Bren School of Information and Computer Sciences and The Henry Samueli School of Engineering)
  - Tracks:
    - Algorithms
    - Artificial Intelligence
    - Graphics/Vision
    - Parallel and Distributed Computing

Minors:
- Civic and Community Engagement
- Global Sustainability
- History and Philosophy of Science
- Native American Studies

SCHOOL OF PHYSICAL SCIENCES

Majors:
- Chemistry, B.S.
  - Concentrations:
    - Biochemistry
    - Chemistry Education (with Secondary Teaching Certification option)
- Earth and Environmental Sciences, B.S.
  - Concentration: Geosciences Education with Secondary Teaching Certification
- Earth and Environmental Studies, B.A.
  - Concentration: Geosciences Education with Secondary Teaching Certification
- Mathematics, B.S.
  - Concentrations:
    - Mathematics for Economics
    - Mathematics for Education/Secondary Teaching Certification
  - Specializations:
    - Applied and Computational Mathematics
    - Mathematics for Education
    - Statistics
- Physics, B.S.
  - Concentrations:
    - Applied Physics
    - Biomedical Physics
    - Computational Physics
    - Philosophy of Physics
    - Physics Education (with Secondary Teaching Certification option)
  - Specialization: Astrophysics

Minors:
- Earth and Atmospheric Sciences
- Mathematics

SCHOOL OF SOCIAL ECOLOGY

Majors:
- Criminology, Law and Society, B.A.
- Psychology and Social Behavior, B.A.
- Social Ecology, B.A.
- Urban Studies, B.A.

Minors:
- Criminology, Law and Society
- Environmental Design
- Psychology and Social Behavior
- Urban and Regional Planning
- Urban Studies

SCHOOL OF SOCIAL SCIENCES

Majors:
- Anthropology, B.A.
- Business Economics, B.A.
  - Specialization: International Issues and Economics
- Chicano/Latino Studies, B.A.
- Economics, B.A.
  - Specialization: International Issues and Economics
- International Studies, B.A.
- Political Science, B.A.
- Psychology, B.A.
- Quantitative Economics, B.A.
  - Specialization: International Issues and Economics
- Social Science, B.A.
  - Specializations:
    - Public and Community Service
    - Research and Social Policy
- Sociology, B.A.

Minors:
- Anthropology
- Chicano/Latino Studies
- Conflict Resolution
- Economics
- Linguistics
- Medical Anthropology
- Political Science
- Psychology
- Sociology

COLLEGE OF HEALTH SCIENCES

Majors:
- Nursing Science, B.S.
- Pharmaceutical Sciences, B.S.
- Public Health Policy, B.A.
- Public Health Sciences, B.S.

Minor: Public Health

AREAS OF GRADUATE STUDY

For information about any area of graduate or professional study, **including the precise title of the degree conferred,** consult the *Catalogue's* academic unit sections.

Claire Trevor School of the Arts

Acting
Choral Conducting
Collaborative Piano
Dance
Design
Directing
Drama
Drama and Theatre
Guitar/Lute Performance
Instrumental Performance
Integrated Composition, Improvisation, and Technology (ICIT)
Piano Performance
Stage Management
Studio Art
Vocal Arts

School of Biological Sciences

Anatomy and Neurobiology
Biological Chemistry
Biological Sciences
Biotechnology; Stem Cell Biology
Cellular and Molecular Biosciences (CMB)[1]
Developmental and Cell Biology
Ecology and Evolutionary Biology
Experimental Pathology
Interdepartmental Neuroscience Program (INP)[1]
Mathematical and Computational Biology[2]
Medicinal Chemistry and Pharmacology (MCP)[2]
Microbiology and Molecular Genetics
Molecular Biology and Biochemistry
Neurobiology and Behavior
Physiology and Biophysics

The Paul Merage School of Business

Business Administration
Executive M.B.A. (EMBA)
Fully Employed M.B.A. (FEMBA)
Health Care Executive M.B.A. (HCEMBA)
Management

Department of Education

Education
Elementary and Secondary Education
Multiple Subjects Credential (elementary)[3]
Single Subject Credential (secondary)[3]
Single Subject Credential in Mathematics, English, or Science with an Internship[3]
Bilingual Crosscultural, Language, and Academic Development (BCLAD) Emphasis in Spanish[3]
Preliminary Administrative Services[3]
Professional Clear Administrative Services[3]

The Henry Samueli School of Engineering

Biomedical Engineering
Chemical and Biochemical Engineering
Civil Engineering
Civil Engineering/Urban and Regional Planning[4]
Computer Graphics and Visualization
Computer Networks and Distributed Computing
Computer Systems and Software
Electrical Engineering
Environmental Engineering
Materials and Manufacturing Technology
Materials Science and Engineering
Mechanical and Aerospace Engineering
Networked Systems[5]

School of Humanities

Asian American Studies[6]
Art History[7]
Chicano/Latino Literature
Chinese Language and Literature
Classics
Comparative Literature
Creative Nonfiction
Creative Writing: Poetry or Fiction
Critical Theory
Culture and Theory
East Asian Cultural Studies

East Asian Languages and Literatures
English and American Literature
Feminist Studies[8]
Film and Media Studies[7]
French
German
Greek
History
History of Gender and Sexuality
Humanities
Japanese Language and Literature
Latin
Philosophy
Spanish
Spanish Literature
Spanish-American Literature
Translation Studies
Visual Studies

Donald Bren School of Information and Computer Sciences

Computer Science
Embedded Systems
Informatics
Information and Computer Science
Networked Systems[5]
Statistics

Interdisciplinary Graduate Programs

Cellular and Molecular Biosciences (CMB)[1]
Chemical and Materials Physics
Interdepartmental Neuroscience Program (INP)[1]
Mathematical and Computational Biology[2]
Mathematical Behavioral Sciences
Medicinal Chemistry and Pharmacology (MCP)[2]
Networked Systems[5]
Transportation Science
Visual Studies

School of Law

Law (J.D.)

School of Physical Sciences

Chemical and Materials Physics
Chemistry
Chemistry and Teaching Credential
Earth System Science
Mathematics
Mathematics and Teaching Credential
Medicinal Chemistry and Pharmacology (MCP)[2]
Physics

School of Social Ecology

Criminology, Law and Society
Demographic and Social Analysis
Environmental Analysis and Design
Epidemiology and Public Health[9]
Planning, Policy, and Design
Psychology and Social Behavior
Social Ecology
Urban and Regional Planning
Urban and Regional Planning/Civil Engineering[4]

School of Social Sciences

Anthropology
Chicano/Latino Studies
Cognitive Neuroscience
Cognitive Sciences
Demographic and Social Analysis
Economics
Games, Decisions, and Dynamical Systems
Logic and Philosophy of Science
Mathematical Behavioral Sciences
Political Psychology
Political Science
Psychology
Public Choice
Social Networks
Social Science
Sociology
Transportation Economics

College of Health Sciences

Pharmaceutical Sciences, Medicinal Chemistry and Pharmacology (MCP)[2]
Nursing Science
Public Health

School of Medicine

Anatomy and Neurobiology
Biological Chemistry
Cellular and Molecular Biosciences (CMB)[1]
Environmental Toxicology
Epidemiology and Public Health[9]
Experimental Pathology
Genetic Counseling
Interdepartmental Neuroscience Program (INP)[1]
Medical Residency Programs
Medical Scientist Training Program (M.D./Ph.D.)
Medicinal Chemistry and Pharmacology (MCP)[2]
Medicine
Medicine/Business Administration[10]
Microbiology and Molecular Genetics
Pharmacology and Toxicology
Physiology and Biophysics
Program in Medical Education for the Latino Community (PRIME-LC)

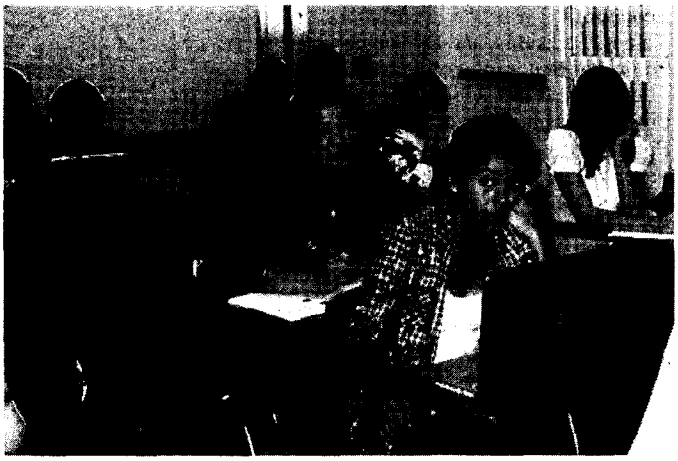
[1] School of Biological Sciences and School of Medicine joint program.
[2] Available in conjunction with selected Ph.D. programs.
[3] Credential program.
[4] The Henry Samueli School of Engineering and School of Social Ecology concurrent master's program.
[5] Donald Bren School of Information and Computer Sciences and The Henry Samueli School of Engineering joint program.
[6] Available in conjunction with selected graduate programs. Contact the Department of Asian American Studies for information.
[7] Graduate program in Visual Studies.
[8] Available in conjunction with selected graduate programs. Contact the Department of Women's Studies for information.
[9] The School of Social Ecology offers this concentration with participation from the Department of Epidemiology in the School of Medicine.
[10] School of Medicine and The Paul Merage School of Business program.

MAJORS AND CAREERS

Choosing a Major

Many students select their University major, the field of study which represents their principal academic interest, at the time they fill out their *University of California Undergraduate Application for Admission and Scholarship.* Some students, however, are not ready to choose a major at the time they apply, and still others may wish to change to a different major after they have enrolled.

In preparation for choosing a major, students need to familiarize themselves as much as possible with UCI and its academic programs. Entering students are exposed to a wide range of areas of study, and it is not unusual for students to become enthusiastic about academic disciplines previously unfamiliar to them. At UCI a number of traditionally separate academic disciplines have strong



interrelationships, so that the academic environment is influenced by broad interactions among disciplines. As a complement to classroom study, UCI encourages its students to become involved in a variety of educational experiences such as independent study, laboratory research, field study, writing workshops, computing, and arts productions. Such experiences can help students identify additional areas of interest.

The *UCI General Catalogue* is a good place to find specific information about programs available and requirements. Students are encouraged to talk to academic counselors and faculty advisors and to go to any department to learn more about its programs of study, its requirements for graduation, and possible enrollment limitations. (Some majors are impacted, that is, more students apply than can be accommodated. See the Undergraduate Admissions section for information.) While advisors may not be familiar with all fields, they can suggest ways to investigate other areas of study and be helpful in planning a lower-division program which will keep several options open. Courses and workshops designed to assist students in choosing a major are offered by the UCI Career Center, the Division of Undergraduate Education, and some of the academic units.

All students are required to choose a major by the time they reach junior status. It is important to look well ahead to this decision and to think about it carefully during the freshman and sophomore years. When considering possible majors, students should keep in mind that some major programs require quite specific preliminary study. At the same time, excessive early concentration could reduce a student's options and could cause the student to need more than four years to obtain the baccalaureate degree. Furthermore, courses required for graduation need to be considered. For these reasons, it is desirable for students to plan their programs carefully and thoughtfully, seeking a balance between exposure to a variety of academic areas and completion of courses which are prerequisite to a major under consideration. A qualified student interested in two areas of study may graduate with a double major by fulfilling the degree requirements of any two programs. Certain restrictions may apply; students should check with their academic advisor.

Each school has its own standards for change of major, and some majors are impacted, as indicated above. Once a student selects a major, or decides to change majors, the student should visit the academic counseling office for their prospective major to obtain current information about prerequisites, program planning, and policies and procedures. In addition, a form called the Undergraduate Petition for Change of Major must be completed. The form is available from academic counselors and the Registrar's Office. All schools with exceptional requirements have major-change criteria approved by the Academic Senate and published on the Division of Undergraduate Education Web site at http://www.changeofmajor.uci.edu. Students changing majors may meet the approved major-change criteria of the unit they wish to enter that are in place at the time of their change of major or those in effect up to one year before.

Undecided/Undeclared Students

Students who enter the University as freshmen or sophomores, who are uncertain about their major, and who wish to explore, experiment, and then decide, participate in the Undecided/Undeclared Advising Program administered by the Division of Undergraduate Education. The Division is devoted to enriching the learning environment for lower-division students, especially those in the freshman year. Detailed information about the Undecided/Undeclared Advising Program is available in the Division of Undergraduate Education section of the *Catalogue.*

Preparation for Graduate or Professional Study

Undergraduate students should keep the possibility of future graduate or professional study in mind as they plan their academic programs, and they should discuss their career goals with their advisors. Students who have an idea of the direction in which they would like to go should familiarize themselves with the basic requirements for postbaccalaureate study and keep those requirements in mind when selecting courses. Furthermore, students should supplement their undergraduate programs by anticipating foreign language or other special requirements at major graduate schools and by intensive work in areas outside their major that are of special relevance to their intended graduate work. Students should consult the graduate advisor or academic counselor in the academic unit corresponding to their area of interest and visit the UCI Career Center which offers a number of services useful to those considering graduate or professional study.

General information for prospective graduate students is available on the Graduate Division Web site (http://www.grad.uci.edu/), while information about UCI's graduate education policies and procedures is available in *The Manual of the Irvine Division of the Academic Senate* (http://www.senate.uci.edu).

Preprofessional Preparation

LAW

Law schools produce lawyers to serve the entire legal spectrum (for example, tax, criminal, entertainment, or immigration law), and this requires a wide range of academic backgrounds. Law schools look less for specific areas of study than they do for evidence of academic excellence. A good record in physics or classics, for example, will be preferred over a mediocre record in history or political science. Most law schools give equal preference to students from all academic disciplines. Courses that help develop writing and analytical skills (logic, writing, mathematics, research methods, and statistics, for example) build skills that are the key to doing well on the Law School Admissions Test (LSAT) and succeeding in law school and the legal profession.

UCI offers a number of law-related courses that students in any major may take. The School of Humanities offers a Humanities and Law minor, emphasizing courses that require critical reading and analysis, and courses that focus on theoretical and applied analytical perspectives on ethical, political, and social issues relevant to the law. The School of Social Sciences offers courses in the study of law, international relations, and economics of law and recommends that students take some political science courses as well. The School of Social Ecology offers many law-related courses in both substantive law (such as environmental and criminal law) and

in law and society and criminal justice, and it offers Social Ecology majors the opportunity to apply theories learned in the classroom to actual problems through its field study program.

Students should know that law schools look closely at five aspects of a student's application: grades, LSAT results, the applicant's statement of purpose, in-depth letters of recommendation, and extracurricular activities and law-related work experience. Students should be aware that not everyone who applies is admitted to law school. One consideration in selecting an undergraduate major is alternative careers should one's goals change.

MEDICINE AND OTHER HEALTH-RELATED SCIENCES

Although health science educators strongly recommend that students obtain a bachelor's degree prior to admission to the health sciences, there is no preferred major. Many UCI students who plan to enter the health professions major in Biological Sciences because much of the basic course work for that major is also required for medical school admission; however, students may major in any academic field as long as they also take the prerequisite courses required by professional health science schools. In general, the minimum amount of undergraduate preparation required includes one year each of English writing/composition, physics, biology with laboratory, chemistry (to include inorganic, organic, and biochemistry), and mathematics (especially calculus and statistics). Courses in cell biology, developmental biology, genetics, molecular biology, physiology, and computer science are recommended. In addition, some health sciences schools have additional course requirements or recommendations, for example, English and/or a foreign language, in particular, Spanish.

Although many factors ultimately are considered when reviewing applicants for admission, admission committees look carefully at the undergraduate grade point average and the results of the Medical College Admission Test (MCAT); the student's personal essay and/or interview; letters of recommendation; clinical exposure; research experience, especially in a biological, medical, or behavioral science; and extracurricular activities which demonstrate the applicant's ability to interact successfully with others.

Since medical programs cannot accommodate all qualified applicants and competition for entrance is keen, it is important to keep in mind alternative career opportunities should one not be accepted to a health science school, or should one decide to pursue instead one of the expanding number of health-related programs now available.

BUSINESS/MANAGEMENT

The contemporary executive or manager must be a creative thinker, make complex decisions, and have the ability to perceive and participate in the full scope of an enterprise while understanding its role in the economy. Effective management requires leadership ability, strong problem-solving skills, the ability to successfully deploy and manage information technologies, effective oral and written communication skills, analytical skills, an understanding of global economic trends, and a basic knowledge of behavioral processes in organizations.

Although not required for preprofessional school preparation, The Paul Merage School of Business offers a major in Business Administration and a major in Business Information Management with the Bren School of Information and Computer Sciences. The Merage School also offers a minor in Management as well as a minor in Accounting as a supplement to any undergraduate major. The Management minor can provide students with a broad understanding of management theory and practice and may be helpful to students in determining whether they wish to pursue a career in business or management or undertake graduate-level study in management. The Accounting minor provides undergraduates with all accounting courses necessary to sit for the CPA examination. It also prepares students for careers in the accounting field or for graduate-level study.

Students can also supplement their major course work to develop the skills needed for business and management by taking electives such as calculus, statistics, economics, psychology, sociology, computer science, and political science, and are encouraged to take intensive course work in the culture, history, geography, economy, politics, and language of specific foreign countries.

For admission purposes, the majority of graduate schools of business look at five areas: grades, scores on the Graduate Management Admission Test (GMAT), the applicant's statement of purpose, in-depth letters of recommendation, evidence of leadership in school and community activities, and work experience. Substantive work experience is becoming an increasingly important prerequisite for many programs.

Students from a variety of undergraduate disciplines including liberal arts, social sciences, physical or biological sciences, computer science, and engineering are encouraged to apply to UCI's Paul Merage School of Business.

Career Opportunities

UCI's academic units which offer undergraduate education leading to the bachelor's degree provide students with opportunities to explore a wide range of interests leading to a career choice or to further education at the graduate or professional level. The lists which follow show the varied career areas pursued by UCI graduates. Any major can lead to a number of careers. Additional discussions of careers are presented in individual academic unit sections.

Arts Career Areas

Acting, Advertising, Animation, Arts Administration, Art Therapy, Broadcasting, Choreography, Composition, Conducting, Conservation/Restoration, Consulting, Criticism, Curating, Digital Arts Production, Direction, Environmental Design, Instrument Repair/Tuning, Interior/Industrial Design, Journalism, Law, Librarianship, Lighting, Marketing, Medical Illustration, Performance, Photography, Physical Fitness, Printing, Production, Publicity, Public Relations, Publishing, Set/Stage/Costume Design, Stage Management, Teaching, Tourism, Visual Resources Management, Writing

The exceptionally talented Claire Trevor School of the Arts graduate may choose to become a professional actor, art historian, artist, dancer, or musician. However, there are many other careers to explore in numerous arts-related areas, or the graduate may wish to combine part-time professional performance with supplemental work. The field of arts administration is an increasingly important career area, offering opportunities to work with opera and dance companies, repertory theatre companies, museums, state and local arts councils, community arts organizations, and arts festivals.

Biological Sciences Career Areas

Bioanalysis, Biochemistry, Biomedical Engineering, Cell Biology, Chiropractic Medicine, Dentistry, Developmental Biology, Dietetics, Environmental Management, Forestry, Genetic Engineering, Health Administration, Industrial Hygiene, Marine Biology, Medical Technology, Medicine, Microbiology, Nurse Practitioner, Occupational Therapy, Oceanography, Optometry, Osteopathy, Plant Biology, Pharmacology, Pharmacy, Physicians' Assistant, Physical Therapy, Podiatry, Public Health, Quality Control, Research, Sales, Speech Pathology, Teaching, Technical Writing and Editing, Veterinary Medicine

The health field is one of the fastest-growing career areas in the country. Work sites may include private corporations, educational institutions, hospitals, health care complexes, private foundations, city and county governments, state agencies, the federal government, and many others.

Engineering Career Areas

Aerospace, Biochemical, Biomedical, Biotechnology, Chemical Engineering, Communications, Computer Architecture, Computer Engineering, Computer Software, Control Systems, Digital Signal Processing, Earthquake Safety, Electric Power, Electronics, Electro-optics, Environmental Control, Environmental Engineering, Flood Control, Geotechnical, High-Speed Image Processing, Hydraulics, High-Frequency Devices and Systems, Land Development and Urban Planning, Manufacturing Engineering, Materials, Process Control, Propulsion and Power, Public Works, Reliability, Robotics, Structures, Traffic, Transportation, Water Resources, Water Supply

These are some areas for employment available to UCI engineering graduates. Career paths typically involve one or more of the following: design, research and development, manufacturing or construction, operations, consulting, applications and sales, management, or teaching. At UCI they will have had the choice of Aerospace, Biomedical, Biomedical: Premedical, Chemical, Civil, Computer, Computer Science and Engineering, Electrical, Environmental, Materials Science, or Mechanical Engineering, as well as a general program in Engineering. However, they will frequently find challenging positions in related areas such as industrial engineering, for which their general and specialty course work at UCI, followed by formal or informal, on-the-job training will qualify them. Approximately half of UCI's Engineering graduates obtain advanced degrees from UCI or other universities, and almost all engage in continuing education to keep abreast of advances in technology. Many Engineering graduates build on their engineering background and enter graduate programs to obtain degrees in the fields of administration, law, medicine, physics, or mathematics.

Humanities Career Areas

Advertising, Banking, Broadcasting, Business, Counseling, Communications, Diplomacy, Education, Film and Television, Foreign Service, Government Service, Human Resources, Insurance, International Relations, Journalism, Law, Library Science, Management/Administration, Marketing, Personnel, Politics, Public Administration, Public Relations, Publicity, Publishing, Research, Retail Sales, Screenwriting, Social Welfare, Teaching, Technical Writing, Tourism, Translating/Interpreting, Writing

Diverse career fields available to Humanities graduates include entry-level positions in both the public and private sectors or professional-level opportunities combining the degree with further specialization. Humanities graduates may also elect to enter professional graduate programs in law, library science, medicine (with proper prerequisites), or public administration. Business and industry utilize Humanities graduates for management training programs in banking, retail sales, and insurance. Graduates with special skills in oral and written communications may look to positions with newspapers, advertising agencies, public relations firms, radio and television stations, and publishing houses.

Technical writers are currently in demand, particularly those who have had some preparation in engineering, computer science, and the sciences. Opportunities for graduates fluent in languages other than English exist in government, business, social service, counseling, foreign service, and international trade, among others.

Information and Computer Science Career Areas

Applications Programming, Biomedical Computing, Computer-Aided Design, Computer Animation, Computer Architecture, Computer Networks, Computer Simulation, Computer Systems Design, Databases, Information Systems Design and Consulting, Embedded Systems, Management Information Systems, Multimedia Applications, Parallel and Distributed Systems, Software Design and Development, Software Management and Maintenance, Supercomputing, Systems Administration, Systems Analysis and Design, Systems Programming, Business Information Management

Graduates of the Donald Bren School of Information and Computer Sciences pursue a variety of careers. Many graduates specify, design, and develop a variety of computer-based systems comprised of software and hardware in virtually every application domain, such as aerospace, automotive, biomedical, consumer products, engineering, entertainment, environmental, finance, investment, law, management, manufacturing, and pharmacology. ICS graduates also find jobs as members of research and development teams, developing advanced technologies, designing software and hardware systems, and specifying, designing, and maintaining computing infrastructures for a variety of institutions. Some work for established or start-up companies while others work as independent consultants. After a few years in industry, many move into management or advanced technical positions. Some ICS students also use the undergraduate major as preparation for graduate study in computer science or another field (e.g., medicine, law, engineering, management).

Physical Sciences Career Areas

Actuarial Science, Aerospace, Analytical Chemistry, Applied Physics and Chemistry, Astrophysics/Astronomy, Bioscience, Computers, Energy Science, Electronics, Engineering Applications, Environmental Science, Food Chemistry, Forensic Chemistry, Geoscience, Inorganic Chemistry, Instrumentation, Laboratory Science, Lasers, Materials Science, Medicine, Nuclear Science, Optical Devices, Organic Chemistry, Pharmacology, Physical Chemistry, Plasma Physics, Quality Control, Radiation Science, Radiology, Solid State Devices, Space Science, Statistics, Teaching

Graduates of the School of Physical Sciences have backgrounds appropriate to a variety of areas in research, teaching, and management. Career opportunities for physical scientists are found in federal, state, and local government as well as in private industry. Chemists may work in research and development and in jobs dealing with health, pollution, energy, fuel, drugs, and plastics. Water districts, crime labs, and major chemical and oil companies are also good resources for employment. Earth and Environmental Sciences majors will find employment in areas such as hazardous waste treatment, resource extraction, pollution remediation, and as consultants to government and high-technology fields. Mathematics graduates find employment in both government and the private sector in such technical fields as operations research, computer programming, marketing research, actuarial work, banking, retail management, and scientific research. Physics graduates find professional positions in education, research and development, and in the electronic and aerospace industries. Possible careers include science teaching and writing, computer and electrical engineering, device and instrumentation development, nuclear and reactor physics, environmental and radiological science, laser and microchip development, astronomy, and geophysics.

Social Ecology Career Areas

Administration, Architecture, Biostatistics, Clinical Psychology, Corrections/Probation, Counseling, Education Support Services, Environmental Design, Environmental Planning and Consulting, Epidemiology, Government Service, Health Service, Hospital Administration, Housing Development, Law, Management/Administration, Mental Health, Program Coordination, Psychology, Public Health Research, Public Relations, Real Estate/Development, Research and Research Design, Social Service, Teaching, Urban Planning, Water Quality Control

Graduates of the School of Social Ecology may hold positions as urban planners, environmental consultants, juvenile probation officers, counselors, elementary and secondary school teachers, legal aides, coordinators of juvenile diversion programs, social workers, mental health workers, special education teachers, architectural consultants, and elected officials, just to cite some examples of career choices. Many School of Social Ecology graduates have used their training to enter graduate programs and obtain advanced degrees in the fields of law; clinical, community, social, developmental, and environmental psychology; public health; public and business administration; environmental studies; urban planning; social welfare; criminology; and the administration of justice.

Social Sciences Career Areas

Banking, Correction/Probation, Counseling, Environmental Analysis, Finance, Foreign Service, Government Service, Health Services, Human Services, Industrial Relations, International Affairs, Labor Relations, Law,

Library Science, Management/Administration, Marketing, Personnel, Psychology, Public Relations, Publishing, Real Estate, Research, Sales, Statistical Analysis, Teaching, Writing

Business and industry often look to social science graduates to fill positions in management, finance, marketing and advertising, personnel, production supervision, and general administration. In the public sector, a wide variety of opportunities are available in city, county, state, and federal government. Teaching is a frequently chosen career at all levels from elementary school teacher to university professor. In addition, many graduates enter professional practice, becoming lawyers, psychologists, researchers, or consultants in various fields.

Health Sciences Career Areas

Patient Care, Provider Relations, Policy Analysis, Policy Development, Air Quality, Food Protection, Radiation Protection, Solid Waste Management, Water Quality, Noise Control, Housing Quality, Vector Control, Environmental Impact Assessment, Risk Assessment, Global Health, Consulting, Program Evaluation, Incident/Disease Investigation, Surveillance, Research Methodology, Data Analysis, Clinical Trials, Social and Economic Development, Health Policy and Law, Demography, Women's Health, Children's Health, Design of Health Care Systems, Pharmaceutical Production and Development, Biotechnology, Medicinal Chemistry, Medicine, Pharmacy, Health Promotion, Health Care Delivery Systems, Physical Restoration and Rehabilitation, Program Management and Design, Disease Prevention and Control, Community Health and Outreach, Health Forensics, Health Insurance and Management, Information Technology, Marketing, Public Relations, Facilities Management and Control

Graduates from the Health Sciences are prepared for a wide range of unparalleled career opportunities at the frontiers of many emerging and established health, industry, government, and research and education fields. Opportunities include working with private corporations, hospitals, medical clinics, health care agencies, pharmaceutical industry, biotechnical industry, local and state government agencies, the federal government, educational providers, court and probation systems, and many others. Health Science graduates can use their education and training to enter a rich variety of graduate programs and to earn professional degrees in related fields.

SPECIAL PROGRAMS

ACCESS UCI and Summer Session Enrollment

Exceptional high school students have two options for enrolling in UCI classes without formal admission to the University.

UC Irvine Extension's ACCESS UCI program is ideal for well-prepared high school seniors who have exhausted the curriculum available in high school and who are looking for advanced-level course work, or for students who are seeking an enrichment course or course work not available at their high school. For information, call (949) 824-5414; e-mail: unex-services@uci.edu; http://unex.uci.edu/courses/access_uci.

UC Irvine Summer Session is another option for highly qualified high school seniors to enroll in regular UCI courses. For further information, contact the UCI Summer Session Office at (949) 824-5493; e-mail: summer-session@uci.edu; http://summer.uci.edu.

Admission and enrollment in courses either through ACCESS UCI or UC Irvine Summer Session does not constitute admission to UCI as an entering freshman student. See the Undergraduate Admissions section of this *Catalogue* for information about applying to UCI and the formal admission process.

UCI Center for Educational Partnerships

The mission of the UCI Center for Educational Partnerships (CFEP) is to create collaborations that support preparation for and success in higher education. CFEP's focus is on equity and access



for all students in order to achieve the University of California's goal of academic excellence. CFEP has three guiding principles: (1) diversity among students and faculty enhances the educational experience the University provides and the scholarship it produces; (2) collaboration promotes the exchange of ideas, leverages resources, and drives collective action; and (3) research guides practice, promotes accountability, and advances knowledge. In order to achieve its mission, CFEP builds lasting partnerships with individuals and institutions committed to improving education; facilitates faculty involvement; engages in K–12 academic preparation; provides teacher professional development; promotes college-going culture; supports undergraduate retention; enhances graduate school preparation; conducts research and evaluation; participates in the national dialogue about educational reform and collaboration; and fosters learning communities to support ongoing professional and intellectual development.

For additional information, contact the Center for Educational Partnerships at (949) 824-7482; http://www.cfep.uci.edu.

Student Support Services

Student Support Services (SSS), a unit of the Division of Undergraduate Education, provides support services to students who are first-generation college students or low-income students, as well as disabled students (those with physical and/or learning disabilities). The goal of SSS is to help students make a successful transition to the University, earn their baccalaureate degree, and accomplish their educational and personal goals. See the Division of Undergraduate Education section of the *Catalogue* for additional information.

Graduate Diversity Programs

The University of California believes that a diverse student and faculty population is integral to academic excellence. It is critical to promoting the lively intellectual exchange and the variety of ideas and perspectives that are essential to advanced scholarly research. The University remains committed to expanding outreach, recruitment, and retention efforts. Through the Graduate Division's diversity programs, steps are taken to increase the participation of diverse groups of U.S. citizens and permanent residents who have been disadvantaged in obtaining graduate education in the United States. See the Graduate Division section of the *Catalogue* for additional information.

Medical Student Support Programs

The School of Medicine's Office of Admissions and Outreach is designed to meet the challenges of California's changing demographics and to contribute to the School's goal of achieving a broad spectrum of diversity in the student population, and ultimately, in the medical profession. The office plays a major role in

the recruitment and retention of targeted socioeconomically disadvantaged students who have the potential of service to the medically underserved communities in California. The School's Office of Diversity and Community Engagement (ODCE) augments the recruitment and retention of students from populations underrepresented in medicine and works closely with the Office of Admissions and Outreach. ODCE also serves as a resource for students by providing a supportive learning environment through advising and counseling prospective students and mentoring students following their admission to medical school. See the School of Medicine section for additional information.

EXPENSES AND FEES

Estimated Expenses

The range of estimated nine-month expenses, including projected fees, books and supplies, room and board, and miscellaneous expenses for California-resident students attending UCI during the 2010–11 academic year are shown in the following chart; fees are subject to change without notice, and the University may impose additional fees.

Expenses for students living off campus vary depending upon number of roommates, location of apartment, amenities, and other factors. Graduate student expenses assume two students sharing a two-bedroom apartment. All other on- and off-campus estimates are based on two students sharing a bedroom. Figures are based on annual surveys in 2009–10 and are intended only as a guide in computing average expenses.

California-Resident Student Status	Living Arrangement	Estimated Nine-Month Expenses
Undergraduate	On campus	$ 25,434
	Off campus	25,434
	At home	19,706
Graduate	On campus	28,278
	Off campus	34,268
	At home	28,278

Fees

All fees, tuition, and charges are subject to change without notice, and the University may impose additional fees. Consult the Registrar's Web site at http://www.reg.uci.edu for the most up-to-date information.

Estimated Undergraduate Student Fees for Academic Year 2010–11[1]	Resident	Nonresident
University Registration Fee	$ 900.00	$ 900.00
Educational Fee	9,402.00	10,260.00
Associated Students Fee	54.00	54.00
UCI Student Center Fee	409.50	409.50
Bren Events Center Fee	69.00	69.00
Recreation Center Fee	264.00	264.00
Campus Spirit Fee	99.00	99.00
Measure S Fee	24.00	24.00
TGIF Fee	10.50	10.50
UG Student Health Insurance Fee[2]	681.00	681.00
Nonresident Tuition	—	22,021.00
Total	$11,913.00	$ 34,792.00

[1] Student fees are based on three quarters of attendance.

[2] Fee levels shown for USHIP fee are for 2009–10 and are subject to change for 2010–11.

Estimated Graduate Student Fees for Academic Year 2010–11 [1, 2]	Resident	Nonresident
University Registration Fee	$ 900.00	$ 900.00
Educational Fee	9,402.00	9,810.00
Associated Graduate Students Fee	27.00	27.00
UCI Student Center Fee	409.50	409.50
Bren Events Center Fee	69.00	69.00
Recreation Center Fee	264.00	264.00
Grad. Student Health Insurance Fee[3]	2,344.00	2,344.00
Nonresident Tuition	—	14,694.00
Total	$13,415.50	$ 28,517.50

[1] Student fees shown are based on three quarters of attendance.

[2] The exact cost of attending UCI varies by program. Students in Public Health, Nursing Science, Full-time M.B.A., Law, Medicine, CSU-UCI Joint Ed.D. program, Executive M.B.A. programs, and M.A.S. Criminology, Law and Society program should refer to the fee information posted on the Registrar's Web site at http://www.reg.uci.edu.

[3] Fee levels shown for GSHIP fee are for 2009–10 and are subject to change for 2010–11.

Payment of Fees

Fees for each quarter are due and payable in advance within deadlines published in the Quarterly Calendar with Deadlines on the Registrar's Web site at http://www.reg.uci.edu. A student will not be officially registered in classes until fees are paid in full, with the exception of students who are participating in the PACE Plan.

Continuing and returning students are required to pay all outstanding fines and other debts in full before they pay their registration fees for an upcoming term.

Information about fee refunds appears later in this section.

The **University Registration Fee** is required of all students regardless of the number of courses taken, unless otherwise noted. This fee is a charge to each student for co-curricular programs, activities, and services which benefit the student and which are complementary to, but not a part of, the instructional programs. No part of this fee is refundable to students who do not use all or any of these services. Graduate students studying out of the State may be eligible to pay 15 percent of the University Registration Fee. M.D. students are required to pay the full Registration Fee for each fall, winter, and spring quarter, and a reduced Registration Fee of $80 for each summer quarter.

The **Educational Fee** provides general support for the University's operating budget, including costs related to instruction, and funds student financial aid. Graduate students studying out of the State may be eligible to pay 15 percent of the Educational Fee. M.D. students are required to pay the full Educational Fee for each quarter in which they enroll, including the summer quarter. The summer quarter Educational Fee level for M.D. students will be the same as that of the previous spring quarter.

The **Associated Students Fee** is administered by the Associated Students of UCI, the Associated Graduate Students, The Paul Merage School of Business Student Association, and the Associated Medical Students. These funds provide social activities, lectures, forums, concerts, and other activities at either a reduced charge, or no charge, to UCI students. The fees are required of all students.

The **UCI Student Center Fee** is required of all students regardless of the number of courses taken. The fee is used to pay the debt service on revenue bonds sold to finance the construction costs of the UCI Student Center.

The **Bren Events Center Fee** is required of all students regardless of the number of courses taken or units carried. The fee is used to pay the debt service on revenue bonds sold to finance the construction costs of the Bren Events Center.

The **Recreation Center Fee** is required of all students regardless of the number of courses taken or units carried. The fee is used to pay the debt service on revenue bonds sold to finance the construction costs of the Student Recreation Center and Athletics facilities improvements.

The **Campus Spirit Fee** is required of all undergraduate students regardless of the number of courses taken or units carried. The fee is used to support Athletics and Campus Spirit Programs.

The **Measure S Fee** is required of all undergraduate students regardless of the number of courses taken or units carried. The fee is used to support, upgrade, and expand the ASUCI Express Shuttle.

The **Green Initiative Fund (TGIF) Fee** is required of all undergraduate students for the fall, winter, and spring quarters regardless of the number of courses taken or units carried. The fee is used to support undergraduate student efforts to reduce the campus's environmental footprint and to promote sustainable educational projects at UCI.

The **Undergraduate Student Health Insurance Fee** is charged over three quarters (fall, winter, and spring) to provide 12-month coverage from September through August. The fee is required of all undergraduate students regardless of the number of courses taken or units carried. The fee is used to provide undergraduate students with health insurance. If students provide evidence of comparable coverage from another source, participation in the mandatory plan may be waived. This fee is subject to change pending the outcome of negotiations with insurance carriers.

The **Graduate Student Health Insurance Fee** is charged over three quarters (fall, winter, and spring) to provide 12-month coverage from September through August. The fee is required of all graduate and medical students regardless of the number of courses taken or units carried. The fee is used to provide graduate and medical students with health insurance. If students provide evidence of comparable coverage from another source, participation in the mandatory plan may be waived. This fee is subject to change pending the outcome of negotiations with insurance carriers.

The **Medical Student Disability Insurance Fee** is required of all medical students. The entire annual fee is charged for the fall quarter.

The **Professional School Student Fee** is required of all students in the M.B.A., J.D., M.D., M.S. in Nursing Science, and M.P.H. programs, regardless of the number of units taken.

A $1,000 advance deposit on the Professional School Student Fee is required of all new M.B.A. students upon their acceptance of admission. This deposit is nonrefundable.

Service Charges (subject to change without notice)

Changes in Class Enrollment after Announced Dates (each transaction)	$ 3.00
Credit by Examination (each petition)	5.00
Late Payment of Registration Fees	50.00
Late Enrollment in Classes	50.00
Returned Check Collection	25.00
Student Parking Permits[1]	
Commuter, monthly	53.00
Commuter Preferred, monthly	71.00
Resident, monthly	80.00

In addition, students may be assessed a course materials fee. Consult the online *Schedule of Classes* for courses requiring the fee and the fee level.

[1] *In accordance with Regents policy, UC parking systems are self-supporting auxiliary enterprises receiving no State appropriations. See http://www.parking.uci.edu/ for fee levels of other types of parking permits. Prices shown are for 2009–10 and are subject to change for 2010–11.*

Miscellaneous Fees (subject to change without notice)

Application Fee[1, 2]	
Undergraduate	$ 60.00
International Undergraduate	70.00
Graduate[3] and Medical	70.00
International Graduate[3] and Medical	90.00
Application Fee for Readmission[1]	
Undergraduate	$ 60.00
International Undergraduate	60.00
Graduate	70.00
International Graduate	70.00
Advancement to Candidacy for Ph.D.	90.00
Duplicate Diploma	22.00
Duplicate Diploma, School of Medicine	125.00
Filing Fee (graduate programs; one-half registration fee)	150.00
Graduate Special Library Borrowing Privileges[4] (per year, nonrefundable, renewable)	50.00
Master's Thesis Electronic Submission Fee	55.00
M.B.A. Acceptance of Admissions Deposit[1]	1,000.00
Transcript of Record (per copy)	13.00
Undergraduate Acceptance of Admission Fee[1] (applied toward University Registration Fee)	100.00
Verification of Student Status (per copy)	13.00

[1] Nonrefundable in all cases.

[2] The fee entitles an applicant to apply to one UC campus. Applicants who are applying to more than one campus must pay the fee for each campus selected.

[3] The Application Fee for The Paul Merage School of Business is $150.

[4] This fee entitles graduate students on Official Leave of Absence or Filing Fee Status to keep their library privileges.

SPECIAL FEE PROGRAMS, WAIVERS, AND EXEMPTIONS

PACE Plan

The PACE Installment Plan allows students to spread the quarterly costs of fee payment over a three-month period. A fee is charged for this privilege. Information about PACE is available from Campus Billing Services, 109 Aldrich Hall; telephone (949) 824-2455.

Reduced-Fee Part-Time Study Program

Part-time study for credit leading to an undergraduate or graduate degree is available in some academic units. To take advantage of reduced fees for part-time status, quarterly course enrollment is limited to 10 units or fewer for undergraduate students and to eight units or fewer for graduate students. Students enrolled in excess units after Friday of the third week of instruction are liable for full fees.

The same admissions standards that apply to full-time students apply to part-time students. Under University policy, academic deans (the Dean of the Division of Undergraduate Education, for undecided/undeclared students; the Dean of Graduate Studies, for graduate students) may approve Petitions for Part-Time Status *only* for reasons of occupation, family responsibilities, or health.

Undergraduate and graduate students on approved part-time status pay the full University Registration Fee and one-half the Educational Fee. Those part-time students who have been determined to be nonresidents of the State of California are assessed one-half the Nonresident Tuition, in addition to the full Registration Fee and one-half the Educational Fee. Part-time students pursuing a professional degree are assessed one-half the Professional School Student Fee, the full Registration Fee, and one-half of the Educational Fee.

Part-time status lapses at the end of each academic year; therefore, a student must reapply each year that part-time status is desired. See the Registrar's Web site at http://www.reg.uci.edu for more information.

Undergraduate petitions are available from academic counselors or the Registrar's Office; graduate students may obtain further information and petitions from the Graduate Division. All students are encouraged to consult with the Office of Financial Aid and Scholarships regarding minimum unit requirements.

Fee Reduction for Staff and Academic Employees

Students who are career employees at UCI or the University of California, Irvine Medical Center are eligible for a two-thirds reduction of the University Registration Fee, the University Educational Fee, and campus-based fees. This applies for up to nine units or three regular session University courses per quarter, whichever is greater. For staff employees, additional information and the Employee Application for Reduced Fees is available from Human Resources. Academic employees should contact the Office of Academic Personnel.

Exemptions from the Nonresident Tuition Fee

See the California Residence and the Nonresident Tuition Fee section below for information about exemptions from the Nonresident Tuition Fee.

Exemptions from Fees

A student who is a child, spouse, or registered domestic partner of a resident law enforcement officer or fire fighter killed in active duty shall be exempted from nonresident tuition and fees in accordance with Section 68120 of the Education Code of the State of California.

In accordance with Section 66025.3 of the Education Code of the State of California, a resident student may be exempted from mandatory systemwide fees if (a) the student is the child or dependent of a veteran of the United States military who has a service-connected disability or who has been killed in service; (b) the student is the dependent of a member of the California National Guard who, while in active service of the State, has acquired a service-connected disability or has been killed in service; or (c) the student is the surviving spouse (who has not remarried) or registered domestic partner (who has not married or registered as a domestic partner) of a member of the California National Guard who, while in active service of the State, has acquired a service-connected disability or has been killed in service.

A nonresident student who meets the requirements of Section 68130.5 of the Educational Code of the State of California regarding attendance and graduation from a California high school shall be exempt from paying nonresident tuition.

CALIFORNIA RESIDENCE AND THE NONRESIDENT TUITION FEE

All students who have not lived in California with the intent to make California their permanent home for more than one calendar year prior to the residence determination date for each quarter or semester they propose to attend the University must pay the Nonresident Tuition Fee. The residence determination date is the day instruction begins at the last of the University of California campuses to open for the quarter, and for schools on the semester system, the day instruction begins for the semester.

Laws Governing Residence

The rules regarding residence classification for tuition purposes at the University of California are governed by the California Educational Code and implemented by the Standing Orders of The Regents of the University of California. Under these rules adult citizens and certain classes of non-citizens can establish residence for tuition purposes. There are particular rules that apply to the residence classification of minors.

Who Is a Resident?

Adult students (at least 18 years of age) may establish residence for tuition purposes in California if they are a U.S. citizen, a permanent resident or other immigrant, or a nonimmigrant who is not precluded from establishing a domicile in the U.S. This includes nonimmigrants who hold valid visas of the following types: A, E, H-1, H-4, I, K, L, O-1, O-3, R, or V.

To establish residence a student must, immediately prior to the residence determination date:

1. Be physically present in California for more than one calendar year, *and*
2. Must have come to California with the intent to make California the permanent home. For example, physical presence within the state of California solely for educational purposes does not constitute the establishment of California residence regardless of the length of stay.
3. Students under 24 years of age whose parents are not residents of California will be required to meet the Financial Independence requirement in order to be classified as a resident for tuition purposes.

Residence cannot be derived from a spouse or parents.

Requirements for Financial Independence

The financial independence requirement will not be a factor in residence determination if the student meets one of the following criteria:

1. The student's parents upon whom the student is financially dependent, are residents of California.
2. At least 24 years of age by December 31 of the calendar year of the term for which resident classification is requested.
3. Veteran of the U.S. Armed Forces.
4. A ward of the court or both parents are deceased.
5. Has legal dependents other than a spouse or registered domestic partner.
6. A married or registered domestic partner student, a graduate student, or a professional student who was not claimed as an income tax deduction by parents or any other individual for the tax year immediately preceding the term for which resident classification is requested.
7. Financial independence is not a factor in residence status for graduate student instructors, graduate student teaching assistants, research assistants, junior specialists, postgraduate researchers, graduate student researchers, and teaching associates who are employed 49 percent or more of full time in the term for which resident classification is requested.
8. An unmarried undergraduate student, not claimed as an income tax deduction by parents or any other individual for the two tax years immediately preceding the term for which resident classification is requested, who can demonstrate self-sufficiency for those years.
9. Reached the age of majority in California while his/her parents were residents of this state *and* the California resident parents leave the state to establish a residence elsewhere *and* the student continues to reside in California after the parents' departure.

Establishing Intent to become a California Resident

Relevant indicia that contribute to the demonstration of a student's intent to make California the permanent home include, but are not limited to, the following: registering to vote and voting in California elections; designating a California permanent address on *all* records (i.e., school, employment, military); obtaining a California Driver License or California Identification Card; obtaining a California vehicle registration; paying California income taxes as a resident (including taxes on income earned outside California from the date California residence was established); maintaining a California residence in which personal belongings are kept; licensing for professional practice in California; and the *absence* of these indicia in places other than California during any period for which residence in California is asserted.

General Rules Applying to Minors

The residence of the parent with whom an unmarried minor (under the age of 18) lives is the residence of the unmarried minor. When the unmarried minor does not live with either parent, the residence of the unmarried minor is that of the parent with whom the unmarried minor last lived. An unmarried minor may establish his or her own residence when both parents are deceased and a legal guardian has not been appointed unless the unmarried minor is a minor non-citizen who is precluded by the Immigration and Nationality Act from establishing domicile in the U.S. *The residence of an unmarried minor who has a parent living cannot be changed by the unmarried minor's own act, by the appointment of a legal guardian, or by the relinquishment of a parent's right of control.*

Specific Rules Applying to Minors

1. **Parent of Minor Moves from California.** If the California resident parent(s) of an eligible minor moves from California, the minor will be entitled to resident classification as long as the minor enrolls full-time in a California public postsecondary institution within one calendar year of the parent's departure, and remains physically present in California. This classification will continue until the minor has attained the age of majority and has resided in California for the minimum time required to become a resident. The Financial Independence requirement does not apply to this situation.
2. **Self-Supporting Minor.** Minor students who are U.S. citizens or eligible non-citizens may be eligible for resident classification if documentation of physical presence, intent to be a California resident, and self-support through the student's own employment or credit is provided for the entire calendar year prior to the residence determination date.
3. **Two-Year Care and Control.** Minor students who are U.S. citizens or eligible non-citizens may be eligible for resident classification if they have lived with and been under the continuous care and control of an adult or series of adults other than a parent for not less than two calendar years. The adult or series of adults must have been responsible for care and control for the entire two-year period and must be California residents for 366 days prior to the residence determination date of the term for which resident classification is requested.

Exemptions from the Nonresident Tuition Fee

Students for whom any of the following conditions apply may be eligible for an exemption from the Nonresident Tuition Fee.

1. **Member of the Armed Forces, dependent spouse, registered domestic partner, or child.** A student on active duty as a member of the Armed Forces of the United States stationed in California, and their spouses or registered domestic partner, and dependent children. An undergraduate who is the natural or adopted child, stepchild, spouse, or registered domestic partner who is the dependent of a member of the U.S. Armed Forces, stationed in California on active duty, may be entitled to an exemption from the nonresident tuition. Graduate and professional school students are entitled to this exemption for two years, during which time the student must fulfill the UC residence requirements in order to maintain residency status.
2. **Child, spouse, or registered domestic partner of a faculty member.** To the extent that university funds are available, a student who is the unmarried, dependent child under the age of 21 or the spouse or registered domestic partner of a University of California faculty member who is a member of the Academic Senate.
3. **University employee or dependent child, spouse, or registered domestic partner of a University employee.** A student who is a full-time University employee who is permanently assigned to work outside the State of California or the unmarried, dependent child under the age of 21 or the spouse or registered domestic partner of a full-time employee of the University of California who is permanently assigned to work outside the State of California (i.e., Los Alamos National Laboratory).
4. **Child, spouse, or registered domestic partner of a deceased public law enforcement or fire suppression employee.** A student who is the child, spouse, or registered domestic partner of a deceased public law enforcement or fire suppression employee, who was a California resident and was killed in the course of law enforcement or fire suppression duties.
5. **Dependent child of a California resident.** A student who has not been an adult resident for more than one year and is the natural or adopted, dependent child of a California resident who has been a resident for more than one year immediately prior to the residence determination date. The student must also maintain full-time attendance in a California public postsecondary institution.
6. **Graduate of a California school operated by the Federal Bureau of Indian Affairs (B.I.A.).** A student who is a graduate of a California school operated by the B.I.A. (i.e., Sherman Indian High School) and who enrolls at the University of California.
7. **Employee of California public school district.** A student holding a valid credential authorizing service in California public schools and employed by a school district in a full-time certificate position.
8. **Student athlete in training at U.S. Olympic Training Center, Chula Vista.** An amateur student athlete in training at the U.S. Olympic Training Center in Chula Vista, until the student has resided in California the minimum time necessary to become a resident.
9. **Graduate of California high school.** A student who attended high school in California for three or more years (9th grade included) and graduated from California high school (or attained the equivalent).
10. **Congressional Medal of Honor recipient.** An undergraduate student under age 27 who is the recipient of the Congressional Medal of Honor or a child of a recipient who at the time of his or her death was a California resident.
11. **Surviving dependents of 9/11 terrorist attacks.** Undergraduate students who are the surviving dependents of a California resident who was killed in the 9/11/01 terrorist attacks of the World Trade Center, the Pentagon Building, or the crash of United Airlines flight 93.

Temporary Absences

If a nonresident student is in the process of establishing a domicile in California and returns to his or her former home during noninstructional periods, the student's presence in California will be presumed to be solely for educational purposes and only convincing evidence to the contrary will rebut this presumption. *Students who are in the State of California solely for educational purposes will not be classified as residents for tuition purposes regardless of their length of stay in California.*

If a student who has been classified as a resident for tuition purposes leaves California temporarily, the absence could result in the loss of California residence. The burden of proof is on the student to demonstrate through documentation that he or she (or the parents if the student is a minor) did nothing inconsistent with a claim of continuing California residence during a temporary absence. Steps that should be taken to retain California residence include, but are not limited to:

1. Continue to use a California address on all records (educational, employment, military, among others).
2. Continue to satisfy California tax obligations. A student claiming California residence is liable for payment of income taxes on his or her total income from the date he or she begins to establish residence in California, *including* income earned in another state or country.
3. Retain a California voter's registration and vote by absentee ballot.
4. Maintain a California Driver License, California Identification Card, and vehicle registration in California. If it is necessary to change the driver's license or vehicle registration, it *must* be changed back to California in the time prescribed by law.

Change in Resident Classification

Continuing students who are classified as nonresidents for tuition purposes, and who believe that they will be eligible for resident status for an upcoming quarter, must submit a Petition for Resident Classification to the Office of the Registrar in order to have their residence status changed before they submit their registration fee payment for the applicable quarter. Students must initiate all changes of status before the registration deadline of the quarter for which they want to be reclassified. (Specific deadline dates are listed on the Registrar's Web site at http://www.reg.uci.edu.) Students are strongly encouraged to submit their petition at the earliest possible date in order to expedite the review process. As long as submission deadlines are met, students may be allowed a period of time no later than the end of the quarter to provide any additional documentation required for residence determination.

Incorrect Classification

Any student found to be incorrectly classified as a resident is subject to nonresident classification and to payment of all previously unpaid Nonresident Fees. If a student has concealed information or furnished false information, and was classified incorrectly as a result, the student is also subject to University discipline. Resident students who become nonresidents of California must immediately notify the UCI Residence Officer.

Inquiries and Appeals

Inquiries regarding residence requirements, determination, and/or recognized exceptions should be directed to the University of California, Irvine, Residence Officer, Registrar's Office, 215 Aldrich Hall, Irvine, CA 92697-4975, telephone (949) 824-6129, or to the Principal Legal Analyst, Residence Matters, 1111 Franklin Street, 8th Floor, Oakland, CA 94607-5200. *No other University personnel are authorized to supply information relative to residence requirements for tuition fee purposes.*

This summary is *not* a complete explanation of the law regarding residence classification. Additional information is available from the Office of the Registrar. Changes may be made in the residence requirements between the publication of this statement and the relevant residence determination date. Any student, following a final decision on residence classification by the Residence Officer, may appeal in writing to the Legal Analyst within 30 days of notification of the Residence Officer's final decision.

Fee Refunds

Student Fee Refunds

Students who pay fees for a regular academic term and then decide to withdraw from the University must submit a Withdrawal form, complete with the signature of their academic dean. Undergraduate students must submit the form to the University Registrar; graduate students to the Graduate Division; medical students to the Curricular Affairs Office in the School of Medicine; law students to the Law School Registrar's Office. This form serves two purposes: (1) a refund of fees, if applicable; and (2) withdrawal from classes.

The effective date of withdrawal is used in determining the percentage of fees to be refunded. This date is normally the date that the student submits the form to the appropriate Dean for approval. It is presumed that no University services will be provided to the student after that date. Registration fees are refunded as follows.

Prior to and including the first day of instruction, fees are refunded in full, except for (1) a $10 service charge for continuing and readmitted students, *or* the $100 Acceptance of Admission Fee for new undergraduate students, *or* the applicable deposit fee for new health sciences and M.B.A. students, and (2) the Student Health Insurance Fee. (The Student Health Insurance Fee is refunded only if the Withdrawal form is submitted *prior to the first day of the quarter.)* Students should bear in mind that the "first day of the quarter" often is several days prior to the "first day of instruction." Refer to the Academic Calendar for exact dates.

A refund of the Medical Student Disability Insurance Fee (if applicable) may be requested.

After the first day of instruction, the fee refund is prorated as shown (with the exception of the Health Insurance Fee).

Standard Refund Schedule

Calendar days, beginning with the first day of instruction	Refund
1	100 percent
2–7	90 percent
8–18	50 percent
19–35	25 percent
over 35	no refund

New students receiving Federal Financial Aid follow the refund schedule outlined below.

Refund Schedule for New Students Receiving Federal Financial Aid

Calendar days, beginning with the first day of instruction	Refund
1	100 percent
2–7	90 percent
8–14	80 percent
15–21	70 percent
22–28	60 refund
29–35	50 percent
36–42	40 refund
over 42	no refund

Financial aid recipients should see the UCI Office of Financial Aid and Scholarships Student Withdrawal Policy on page 31, or consult their Web site at http://www.ofas.uci.edu.

Claims for a refund of fees must be presented during the fiscal year (July 1 to June 30) in which the claim is applicable. Refund checks are issued by the Accounting Office approximately three weeks after the official notice of withdrawal is initiated.

Law students follow refund schedules set by the School of Law. Refer to the School of Law Web site at http://www.law.uci.edu for further information.

Housing Refunds

UCI Housing Contracts provide students with complete housing refund policies.

FINANCIAL AID

Lack of funds need not be a barrier to attending UCI; over 60 percent of UCI's enrolled students receive some form of financial aid. Students who demonstrate that they need financial assistance in order to attend may be eligible for scholarships, grants, loans, and/or work-study awards through the Office of Financial Aid and Scholarships. In addition to awarding aid on the basis of financial need, some scholarships are awarded on the basis of academic excellence. Information regarding the application process, deadlines, and financial aid programs for undergraduate, graduate, and medical students may be found online at http://www.ofas.uci.edu/.

Free Application for Federal Student Aid (FAFSA/Renewal Application and FAFSA on the Web). To obtain financial aid, new and continuing students must file the FAFSA or FAFSA on the Web (FOTW) and submit the necessary supporting documents each year. The FAFSA is available at http://www.fafsa.gov/, and paper forms are available by calling (800) 4-FED-AID /(800) 433-3243. Renewal notifications are mailed to current financial aid recipients starting in mid-January. Students are encouraged to apply as early as possible after January 1. The priority deadline to file the FAFSA/FOTW for loans, work-study, and most grants is March 2. For priority consideration of these funds, all other supporting documentation must be submitted to the Office of Financial Aid and Scholarships by May 1 or the specified due date.

The University expects the student and the parent (or spouse) to contribute toward the educational costs to the extent possible. For dependent students, an analysis of the FAFSA and supporting documents determines the amount a student and the student's parents can be expected to contribute toward the cost of the student's education. For independent students, the analysis determines the amount a student and, if applicable, a spouse, can contribute to the cost of the student's education. Income, assets, size of family, and the number of family members in college (excluding parents) are the major factors considered in the analysis. Assets include, but are not limited to, equity in real estate other than family residence;

stocks, bonds, and other securities; business equity; and cash, savings, and checking accounts. Income includes wages, salaries, interest, dividends, and nontaxable income such as Social Security, Veterans' benefits, and foreign income.

All undergraduate financial aid applicants are required to apply for a Pell Grant, and eligible California residents are required to apply for a Cal Grant. The application deadline for Cal Grants is March 2 for the following academic year.

Special Expenditures. Financial aid recipients who are in need of money for special expenditures (beyond the cost of books and basic supplies associated with certain courses of study) may make an appointment to see a financial aid counselor to explore the possibility of a budget extension, based on the availability of funds. Examples of such special expenditures include special equipment for students with disabilities and computer purchases.

Eligibility Requirements

Federal financial aid programs are subject to regulations that define the criteria students must meet to qualify and maintain eligibility for those programs. The regulations state that a student must (1) be a U.S. citizen or an eligible noncitizen of the U.S.; (2) be accepted for admission to the University; (3) be enrolled in good standing at the University; units taken through the University Extension program are not counted toward half- or full-time enrollment; (4) demonstrate financial need (except for William D. Ford Federal Direct Unsubsidized Loans and Federal PLUS loans); financial need is the difference between the reasonable, approved expenses of attending UCI and all available resources, including the expected contribution from parents, the student, and any outside aid; (5) maintain satisfactory academic progress for financial aid, as outlined below; (6) be registered with the Selective Service if the student is a male at least 18 years old, born after December 31, 1960, and not on active duty with the armed forces; (7) not owe a refund on a federal grant or be in default on a federal educational loan.

Once a student meets the above criteria, disbursement of financial aid funds is made only if the student does not have outstanding debts owed to UCI.

UCI POLICY ON SATISFACTORY ACADEMIC PROGRESS FOR FINANCIAL AID

Undergraduate and Graduate Students

In defining student eligibility for financial aid, the Higher Education Act Amendments of 1986 state that a student must maintain "satisfactory progress in the course of study the student is pursuing, according to the standards and practices of the institution at which the student is in attendance." Federal regulations of May 1982 state that each institution shall establish, publish, and apply "reasonable standards" for assuring that every student receiving need-based financial aid should maintain "satisfactory progress in his/her course of study." Final Federal regulations, published October 6, 1983, state that "in order to receive student financial aid under the programs authorized by Title IV of the Higher Education Act, a student must be maintaining satisfactory progress in the course of study he or she is pursuing according to the standards and practices of the institution in which he or she is enrolled."

Satisfactory Academic Progress Requirements for Financial Aid

The following requirements for satisfactory academic progress for receipt of financial aid apply to all applicants for any financial aid awards administered by the UCI Office of Financial Aid and Scholarships who entered fall 2006 or thereafter. These requirements are separate and distinct from UCI's policy regarding satisfactory academic progress. (Students who entered *prior to fall 2006* are subject to a different set of satisfactory academic progress requirements and should consult http://www.ofas.uci.edu/content/pdf/0607/SAP_Policy_Prior_To_Fall_2006.pdf for details.)

1. **Grade Point Average (GPA).** All financial aid recipients must be in compliance with the following minimum cumulative GPA requirements at the conclusion of the spring quarter of each academic year: undergraduates: first year, 1.85; second year, 1.90; third year, 1.95; fourth year, 2.0; fifth year, 2.00; graduate students: 3.0; medical students: academic performance requirements to pass course.

2. **Units** (Undergraduate and Graduate) and Clock Hours (Medical Students). All financial aid applicants must comply with the following minimum cumulative unit or clock-hour requirements.

Undergraduates:

	Minimum Progress Requirements			
Quarters of Attendance	Units/ Quarter*	End of Year Total	Cumulative Total	Normal Cumulative Total
1	8		8	15
2	9		18	30
3	9	27	27	45
4	10		41	60
5	11		56	75
6	12	72	72	90
7	12		88	105
8	15		105	120
9	13	124	124	135
10	14		141	150
11	14		159	165
12	13	164	164	180

Students admitted as Advanced Standing

	Minimum Progress Requirements			
UCI Quarters of Attendance	UCI Units/ Quarter*	End of Year Total	Cumulative Total	Normal Cumulative Total
1	12		88	100
2	15		105	115
3	13	124	124	131
4	14		141	147
5	14		159	163
6	13	164	164	180

Part-time Students: Completion of at least 6 units per quarter.

*These requirements are separate from enrollment requirements for specific financial aid programs. Contact the Office of Financial Aid and Scholarships for more information.

Graduate Students: Completion of at least 8 units per quarter.

NOTE: Undergraduate and graduate students who enroll in more than the minimum number of units required per quarter in the first and second years will have the additional units carried forward for the cumulative total.

Medical Students—Regular Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	783	783
2	740	1,523
3	2,080	3,603
4	1,540	5,143

Medical Students—Extended Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	392	392
2	391	783
3	740	1,523
4	1,040	2,563
5	1,040	3,603
6	1,540	5,143

3. **Quarter Limits for Eligibility.** All financial aid applicants exceeding the following quarter limits will be ineligible for financial aid consideration. Students will not be granted additional quarters of eligibility solely by reason of changing their field of study or pursuing more than one major.

Undergraduate students:

1. Entering freshmen are eligible for all types of financial aid for a total of 15 quarters of academic year attendance.

2. Advanced standing transfer students are eligible for all types of financial aid for a total of nine quarters of academic year attendance after UCI matriculation.

3. Students acquiring a second bachelor's degree will have up to six quarters of additional financial aid eligibility for a maximum of 21 quarters of undergraduate attendance.

Graduate students:

1. California educational credential students: four quarters of academic year attendance.

2. Master's degree students are eligible for financial aid for up to nine quarters of academic year attendance following completion of their baccalaureate degree. Exceptions are as follows:

Twelve quarters for students in Drama and Theatre; Software; Interactive and Collaborative Technology; Classics; Comparative Literature; East Asian Studies; English; French; German; History (with language requirement); Philosophy; Spanish; Mathematics; Criminology, Law and Society; Planning, Policy, and Design; Psychology and Social Behavior.

3. Doctoral students may be eligible for financial aid for up to 21 quarters of academic-year attendance following the completion of their baccalaureate degree (whether or not they received financial aid during the 21 quarters). Exceptions are as follows:

Eighteen quarters for students in Economics or Psychology.

Twenty-four quarters for students in East Asian Studies, French, German, History (without language requirement), Spanish, Visual Studies, Anthropology, or Sociology.

Twenty-seven quarters for students in Comparative Literature, English, History (with language requirement), or Philosophy.

Medical students:

1. Incoming students in their first year of attendance will be eligible for financial assistance for a total of four years.

2. Students who have been approved for Extended Curriculum will be eligible for financial assistance for a total of six years.

Unit Evaluation

1. **Remedial courses.** *Required* remedial courses will count toward the undergraduate, graduate, and medical student minimum unit/clock-hour requirement of the satisfactory academic progress policy for financial aid.

2. **Grade evaluation.** As defined below, units for the following grades *will not* be counted toward meeting the minimum unit/clock-hour requirement.

Undergraduate and graduate students: F (Failure), I (Incomplete), NP (Not Pass), U (Unsatisfactory), W (Withdraw), NR (No grade reported), Repeat courses (Repeat of a D grade or higher; repeat of an advanced standing or high school course). *Medical students:* F (Failure), NR (No grade reported), Repeat courses (Repeat of a D grade or higher).

3. **Incomplete courses—medical students.** Clock-hours for a grade of Incomplete (I) will be counted toward satisfactory academic progress for the quarter/quintile during which the student took the course. If the student fails to meet the requirements for removing the I and the I becomes a grade of F, the clock-hours for that course will be deleted retroactively from the student's satisfactory academic progress record.

4. **Courses in progress—medical students.** Clock-hours for courses In Progress (IP) will be counted toward satisfactory academic progress during the first quarter/quintile of a course requiring more than two quarters/quintiles for completion. Should the student fail to receive a passing grade, after the course has been completed the clock-hours for that course will be deleted retroactively from the student's satisfactory academic progress record.

Deficiencies in Satisfactory Academic Progress and Their Effect on Receiving Financial Aid

The requirements for undergraduate and graduate student satisfactory academic progress stated above are monitored each quarter and at the end of each academic year. Students who fail to maintain satisfactory academic progress will have their financial aid eligibility affected in the following manner.

1. Quarterly totals—unit and GPA
   a. Cumulative GPA below the minimum required total:

Students are placed on Satisfactory Academic Progress probation for the remainder of the academic year. They are able to receive financial aid funds for that academic year but the GPA deficiency must be cleared by the end of spring quarter of that academic year or the end of summer session. Eligibility for the following academic year will be dependent upon clearing the GPA deficiency. Note: GPA deficiencies must be cleared at a University of California campus.

b. Unit deficiencies:

i. Enrolled in less than the minimum units required but at least six per quarter. Students are placed on Satisfactory Academic Progress probation for the remainder of the academic year. They are able to receive financial aid funds for that academic year but the unit deficiency must be cleared by the end of spring quarter of that academic year or the end of summer session. Eligibility for the following academic year will be dependent upon clearing the unit deficiency.

ii. Enrolled in less than six units per quarter. Students are placed on Satisfactory Academic Progress probation for the remainder of the academic year. They are able to receive campus-based financial aid funds for that academic year but the unit deficiency must be cleared by the end of spring quarter of that academic year or the end of summer session. Eligibility for the following academic year will be dependent upon clearing the unit deficiency.

2. Academic year totals—units and GPA. The Office of Financial Aid and Scholarships will verify the cumulative totals for units and GPA after the conclusion of spring quarter. Students who have unit and/or GPA deficiencies will be required to make up the deficiency prior to receiving any future financial aid funds, including funds that would be used for payment of fees.

3. Quarter limits of eligibility. At the end of each quarter students will be notified by the Office of Financial Aid and Scholarships if they are nearing the quarter limit of eligibility for financial aid. The notice will indicate how many quarters of eligibility remain. Students also will be notified when they have completed the maximum number of quarters of eligibility for financial aid.

Satisfactory Academic Progress Appeals

After failure to maintain satisfactory academic progress, a student will be considered for financial aid only when one of the following conditions has been met: (a) sufficient units/clock-hours have been completed and/or the minimum cumulative GPA requirement has been satisfied, or (b) it is established through the financial aid appeals process that the student encountered some type of extenuating circumstances during the quarter(s) in question which hindered academic performance (e.g., prolonged hospitalization, death in the family).

Appeals Procedure

Students wishing to appeal must submit the UCI Financial Aid Appeal Request Form (available from the Office of Financial Aid and Scholarships); a letter to the Office of Financial Aid and Scholarships stating their reasons for failing to meet the unit, clock-hour, or GPA progress requirements, and whether or not they have solved their difficulties; and any other requested documents. Undergraduate and graduate students may seek the assistance of the University Ombudsman in the preparation of appeals. Medical students may seek the assistance of the Associate Dean of Student and Resident Affairs in the preparation of appeals. They may also be required to submit a degree check, course plan, or letter from their dean.

Undergraduate Students—All relevant material will be presented to the Financial Aid Appeals Board (the Board is composed of Financial Aid professional staff and Academic Counseling staff). Once material has been reviewed, the Board will decide whether eligibility for aid will be reinstated. In the event the Board decides not to accept an appeal, the student will be given the right to a personal interview with the Board. If the student decides to exercise this right, a final recommendation based upon the interview and written material will be made by the Board and forwarded to the Director of Financial Aid and Scholarships for a final decision.

Graduate Students—Appeals are reviewed by (1) the Graduate Advisor of the student's advanced degree program and (2) the Dean of the Graduate Division, who will make the final recommendation to the Director of Financial Aid and Scholarships for a final decision.

Medical Students—All relevant materials will be presented to the Committee on Promotions and Honors. If the Committee, after consideration of the appeal, determines that the appeal should be approved, its decision will be forwarded to the School of Medicine Director of Financial Aid, and aid will be reinstated. In the event the appeal is denied by the Committee, the student will be given the right to a personal interview with the Committee. The Committee will forward the final decision to the School of Medicine Director of Financial Aid for implementation.

UCI OFFICE OF FINANCIAL AID AND SCHOLARSHIPS STUDENT WITHDRAWAL POLICY

Students who withdraw from UCI prior to completing 60 percent of the period for which they received federal financial aid will be subject to both the UC Fee Refund Policy and the Federal Return of Title IV Funds policy. Title IV Funds are federal funds awarded to a student to meet educational expenses. Examples of Title IV Funds include Pell Grants, Federal Supplemental Educational Opportunity Grants (SEOG), Academic Competitiveness Grants (ACG), National Science and Mathematics Access to Retain Talent (SMART) Grants, Federal Direct Loans, and Federal Perkins Loans.

Cancellation of Enrollment. Students who cancel their registration or have their registration cancelled by the University prior to the first day of classes will be invoiced for all financial aid disbursed on their behalf.

The full text of this official policy is available on the Office of Financial Aid and Scholarships Web site at http://www.ofas.uci.edu/content/PoliciesAndConditions.aspx?nav=3.

Any student contemplating withdrawing from the University should contact the Office of Financial Aid and Scholarships to speak with a financial aid counselor concerning the financial ramifications of withdrawing.

Students who are receiving a Cal Grant should also contact the Office of Financial Aid and Scholarships to discuss the ramifications of withdrawing on their Cal Grant status. Students should check with their financial aid counselor on how they may be able to re-establish a quarter of eligibility for their Cal Grant.

Scholarships

Scholarships are awarded on the basis of academic ability, achievement, and promise. They do not require repayment. Although a few honorary scholarships are awarded on the basis of academic excellence alone, many also require that an applicant demonstrate financial need. UCI offers students with proven high academic achievement and leadership potential two top honors awards: Regents' Scholarships and Alumni Association Scholarships.

Entering Freshman and Transfer Students

Students who are entering UCI in the fall must complete the *UC Application for Undergraduate Admission and Scholarships* and submit the application by November 30. The Office of Financial Aid and Scholarships automatically collects information about applicants' scholarship qualifications. Applications that meet the requirements are reviewed by the Board on Undergraduate Scholarships, Honors, and Financial Aid. Information about the Alumni Scholarship is available in the *UC Application for Undergraduate Admission and Scholarships,* however separate application is required for the Alumni Scholarship.

Regents' Scholarships

Regents' scholarships, among the highest honors conferred upon UC students, are awarded on the basis of academic excellence and exceptional promise. Undergraduate students are eligible upon graduation from high school or transfer from community college. Medical students are eligible upon admission to the School of Medicine. The scholarship may be renewed for an additional one or three years depending on the year of appointment, provided the student completes an average of 12 units per quarter and maintains a grade point average of at least 3.25. The amount of the scholarship may vary depending on the student's established financial need.

Restrictive Scholarships

Eligibility requirements for Restrictive Scholarships vary greatly and are restricted in terms of such student characteristics as geographic location, family background, academic major, and career goals. For the most part, these scholarship awards are based on the student's established financial need. All UCI students will be considered for Restrictive Scholarships based upon information from the *UC Application for Undergraduate Admission and Scholarships* and their current academic records.

Grants

Grants are awarded on the basis of financial need. There is no repayment requirement. A student's financial aid award includes grant funds whenever regulations, UCI policies, and funding levels permit.

Federal Pell Grant is the largest federally funded grant program and provides up to a maximum of $5,350 for the 2010–11 academic year. To be eligible, applicants must be U.S. citizens or eligible noncitizens, be enrolled as undergraduates, have not previously received a bachelor's degree, and demonstrate financial need. Students must use the FAFSA to apply for this grant. Students must be enrolled full-time (12 units) to receive the full grant and enrolled at least half-time (6 or more units) to receive a prorated amount.

Academic Competitiveness Grant (ACG) is a federally funded grant program which provides $750 for freshmen and $1,300 for sophomores. To be eligible, applicants must be U.S. citizens, be enrolled freshmen or sophomores, have completed a rigorous program of study in high school, and have a Pell Grant for the 2010–11 academic year. To maintain eligibility as a sophomore, students must have at least a 3.0 cumulative college GPA at the beginning of their sophomore year. Students must use the FAFSA to apply for this grant. Students must be enrolled full-time (12 units) to receive the full grant and enrolled at least half-time (6 or more units) to receive a prorated amount.

SMART Grant (National Science and Mathematics Access to Retain Talent Grant) is a federally funded grant program which provides $4,000 to juniors and seniors. To be eligible, applicants must be U.S. citizens, be enrolled juniors or seniors, and have a Pell Grant for the 2010–11 academic year. Students must be pursuing an approved major as listed on the Financial Aid Web site at http://www.ofas.uci.edu/content/TypesOfAid.aspx?nav=3&id=smartgrant and must maintain a cumulative grade point average of 3.0. Students must use the FAFSA to apply for this grant. Students must be enrolled full-time (12 units) to receive the full grant and enrolled at least half-time (6 or more units) to receive a prorated amount.

Cal Grant A is a State-funded scholarship program which currently provides awards to be applied to the payment of University fees. In 2010–11 Cal Grant A awards are estimated to pay up to $7,788. To be eligible, applicants must be California residents and demonstrate financial need. Students must use the FAFSA and GPA Verification Form to apply for Cal Grant A. The filing deadline for new applicants is March 2 for the following year.

Cal Grant B is a State-funded grant program which provides awards up to a maximum of $1,551 in 2010–11 during the student's first year and $1,551 plus an estimated $7,788 toward fees during subsequent years. To be eligible, applicants must be California residents, demonstrate financial need, and be entering college or not have completed more than one quarter of college work. Students must use the FAFSA and GPA Verification Form to apply for Cal Grant B. The filing deadline for new applicants is March 2 for the following year. *NOTE: Students may not receive both Cal Grant A and Cal Grant B.*

Federal Supplemental Educational Opportunity Grant (FSEOG) provides grant aid for U.S. citizens and eligible noncitizens who are undergraduate students and have demonstrated financial need. These federal grants range from $100 to $4,000 per year, depending upon financial need.

UCI Grant is funded by The Regents of the University of California and by the State of California and provides grant aid for full-time students who demonstrate financial need. The amount awarded depends upon financial need and funding levels.

Loans

Loans are often part of a financial aid award. They provide recipients with an opportunity to defer the cost of their education by borrowing when needed and paying later. However, loan recipients must pay interest on the amount borrowed. The deferment and cancellation provisions for the loans listed below are contained on the promissory note each recipient must sign and also may be obtained from the Office of Financial Aid and Scholarships.

A student's loan responsibility, prior to acceptance of the loan, is to understand the terms of the loan. After accepting the loan, the recipient must repay the loan in accordance with the repayment schedule, advise the Office of Financial Aid and Scholarships upon leaving UCI; participate in an exit interview; and provide the Financial Services Office with a current address after leaving UCI. In case of death or total disability, outstanding loan obligations may be cancelled upon presentation of official confirming documents.

Federal Perkins Loan provides long-term federal loans for U.S. citizens and eligible noncitizens. The amounts awarded vary, depending on financial need, but cannot exceed $5,500 annually for undergraduates and $8,000 annually for graduate students. Cumulative totals for the full term of college attendance may not exceed $27,500 as an undergraduate and $60,000 as a graduate student. No interest is charged nor is repayment required while the borrower is enrolled in at least one half of the normal academic load. Interest of five percent a year begins nine months after the borrower ceases to be enrolled or is enrolled less than half-time, and repayment must be completed within a 10-year period.

University Loan, funded by The Regents of the University of California, provides long-term loans to full-time students who demonstrate financial need. The maximum amount for an academic year is $3,000. Interest of five percent a year begins six months after the student ceases to be enrolled at least half-time, and repayment must be completed within ten years. Two cosigners are required.

William D. Ford Direct Loan Program

Subsidized William D. Ford Federal Direct Loan, processed through the U.S. Department of Education and UCI, is available to undergraduate, graduate, and medical students who are U.S. citizens or eligible noncitizens, and who demonstrate financial need. During an academic year, the maximum a student may borrow is $3,500, freshmen; $4,500, sophomores; $5,500, juniors, seniors, and teaching credential students; $8,500, graduate and medical students. Both a guarantee and origination fee will be deducted from the amount of the loan prior to issuing the check.

Interest rate: The federal government pays interest during the deferment period for Subsidized Direct Loans. See http://www.ofas.uci.edu/ for current as well as historic loan rates and fees.

Unsubsidized Federal Direct Loans have the same terms and conditions as the Federal Direct Loan, including the aggregate loan limits, interest rate, and repayment. During an academic year the maximum a dependent student may borrow is $5,500, freshmen; $6,500, sophomores; $7,500, juniors and seniors. Independent students may borrow an annual maximum of: $9,500, freshmen; $10,500, sophomores; $12,500, juniors and seniors; $20,500, graduate and medical students. These maximum amounts include any amount borrowed under the Subsidized William D. Ford Federal Direct Loan program. However, the loan is not based on need. Students may borrow an amount equal to the cost of attendance less any estimated financial assistance up to the annual loan limits in effect at the time the loan is disbursed. Students must first apply for the Federal Direct Loan prior to consideration for the Unsubsidized Federal Direct Loan. There is no interest subsidy for this loan; students pay the interest charged while enrolled at UCI. Students may receive both subsidized and unsubsidized Federal Direct loans but the total may not exceed the loan limits. Borrowers with both types of loans may have a single repayment schedule.

Interest rate: See http://www.ofas.uci.edu/ for current as well as historic loan rates and fees.

Cumulative maximum: Dependent, undergraduate, $23,000; independent, undergraduate, $57,500; graduate and professional students, $138,500 (includes undergraduate loans); medical students, $224,000 (includes undergraduate loans). Deferment period before repayment: Subsidized: six months after ceasing to be enrolled at least half-time. Unsubsidized: Interest accrues immediately and may be paid monthly or quarterly. Students also may request that the lender add the interest to the principal balance. Repayment of principal begins six months after ceasing to be enrolled at least half-time. Full repayment: Up to 10 years. Minimum payment: $50 per month.

Graduate PLUS Loans are available to graduate and professional-level students. Students may borrow up to the cost of education for the academic year less any estimated financial aid. The loan is limited to students who do not have adverse credit histories as defined by regulation.

Interest rate: See http://www.ofas.uci.edu/ for current as well as historic loan rates and fees.

Federal Direct Parent Loans for Undergraduate Students (FPLUS) are designed to assist parents of dependent undergraduate students who are unable to demonstrate financial need for campus-based funds. Parents are eligible to borrow up to the cost of education for the academic year less any estimated financial aid each academic year on a student's behalf. The loan is limited to parents who do not have adverse credit histories as defined by regulation.

Interest rate: See http://www.ofas.uci.edu/ for current as well as historic loan rates and fees.

Cumulative maximum: None. Deferment period before repayment: 60 days from day of final check disbursement for loan period. Full repayment: Up to 10 years.

Loans for Disadvantaged Students and Primary Care Loans are available to medical students. Contact the School of Medicine Financial Aid Office for information.

Emergency loans are made from an emergency student loan fund made possible through various philanthropic individuals and organizations. Undergraduate, graduate, and medical students who have experienced unanticipated financial problems of a temporary nature may borrow up to $300 without interest or service charge. Emergency loans must be repaid within 30 days after disbursement or by the end of the academic quarter, whichever occurs first. Applications are available in the Office of Financial Aid and Scholarships or at the School of Medicine Financial Aid Office. This loan is not based on demonstrated financial need.

Federal College Work-Study

The Federal College Work-Study Program offers eligible students who demonstrate need an opportunity to pay for their living and educational expenses as they occur. By participating in the Federal College Work-Study Program, students can reduce the amount of the loan to be repaid after leaving school. Medical students must obtain the approval of the Associate Dean of Student and Resident Affairs prior to obtaining work-study employment. Students awarded work-study have the choice of obtaining a work-study job either on campus or off campus at an approved nonprofit agency. A variety of work opportunities are available, and such part-time work experience can be a valuable asset when seeking employment after graduation. Students eligible for work-study will be notified as such via their UCI Financial Aid award notification. Specific information regarding the terms and conditions of work-study employment will be available with the award notification.

Veterans Work-Study Program is available only to U.S. military veterans and their eligible dependents, and members of the Selected

Reserve and National Guard. Positions are limited. Separate applications and detailed information are available from Veteran Services, telephone (949) 824-3500.

Additional Aid for Graduate and Medical Students

Most graduate fellowship programs are administered by the Graduate Division, 102 Aldrich Hall, telephone (949) 824-4611. Medical students should contact the School of Medicine Financial Aid Office, 106 Berk Hall, telephone (949) 824-6476.

Aid for Students with Disabilities

All forms of student financial aid are available to eligible students with disabilities. Interested students should follow the regular financial aid application procedures and should notify the Office of Financial Aid and Scholarships of any additional expenses they may incur because of a disability. Supporting documentation must be provided.

Student Employment

The UCI Career Center, located in the Student Services I building, assists UCI students in obtaining part- or full-time employment during the academic year and summer vacation. Financial aid recipients who have been awarded work-study also may obtain on-campus or off-campus job referrals in the Center. Students may easily access all job listings using their student ID number via ZotLink on the Career Center's Web site at http://www.career.uci.edu/.

UNDERGRADUATE ADMISSIONS

The UCI Office of Admissions and Relations with Schools (OARS) is responsible for the admission of new undergraduate freshman and transfer students. Inquiries may be addressed to UCI Office of Admissions and Relations with Schools, 260 Aldrich Hall, University of California, Irvine, CA 92697-1075; http://www.admissions.uci.edu/. OARS is open from 8 a.m. to 5 p.m., Monday through Friday; telephone (949) 824-6703.

The information on admission to UCI presented below is organized as follows:

Categories of Application
Admission as a Freshman Applicant
Admission as a Transfer Applicant
Nonresident Admission Requirements
Admission of International Students
Advanced Placement and International Baccalaureate Credit
Application Procedures

Categories of Application

An **undergraduate** applicant is a student who wishes to complete a program of study leading to a Bachelor of Arts, Bachelor of Music, or Bachelor of Science degree.

A **freshman** applicant is a student who has graduated from high school or has completed a California Certificate of Proficiency, an equivalent proficiency examination from another state, or the General Educational Development (GED) Certificate, but has not enrolled in a regular session of any collegiate-level institution. Summer sessions immediately following graduation are excluded in the determination of freshman status.

The University considers a **transfer** applicant as a student who has completed high school and who has been a registered student in a regular session at another college or university. Students who meet this definition cannot disregard their college record and apply as freshmen. To be considered as a **California community college transfer** applicant to UCI, a student must have completed at least 30 semester units/45 quarter units at one or more California community colleges.

A **nonresident** applicant is a student whose legal permanent residence (as determined by the University) is outside of the State of California. Nonresident applicants are generally required to pay Nonresident Tuition and must also present a higher grade point average than is required of California residents. Refer to the Nonresident Admission Requirements section for further information.

An applicant for **readmission** is a student who was formerly registered and enrolled at UCI and who has interrupted the completion of consecutive quarters of enrollment. See Readmission: Undergraduate and Graduate Students.

A **second baccalaureate** applicant is a college graduate who, because of a change of objective, wishes to obtain a second bachelor's degree in a major different from that of the first degree.

An **international** applicant is a student who holds or expects to hold a student, exchange, visitor, or diplomatic visa and who wishes to attend school in the United States.

Admission as a Freshman Applicant

The undergraduate admissions policy of the University of California is guided by the University's commitment to serve the people of California and the needs of the State, within the framework of the California Master Plan for Higher Education.

The University's eligibility requirements follow the guidelines set forth in the Master Plan, which specify that the top one-eighth of the State's high school graduates be eligible for admission to the University of California. These requirements, described in detail in the Minimum Admission Requirements for Freshmen section, are designed to ensure that all eligible students are adequately prepared for University-level work. Meeting eligibility requirements entitles an applicant to be considered for admission but does not constitute an offer of admission.

In recent years, the number of freshman applicants to UCI has exceeded the number of spaces available. Since the campus cannot admit all eligible applicants, it must use standards that are more demanding than the minimum UC requirements to select students. These standards, which the University calls selection criteria, are used to identify applicants who have demonstrated the highest academic achievement and who have a variety of other qualities that can contribute to the strength and diversity of the campus community.

In the case that UCI is unable to accommodate all qualified applicants in their first-choice major, those students who indicate a valid alternate major may be offered admission in that major. Students who wish to change their major after enrolling at UCI must submit an Undergraduate Petition for Change of Major to the academic counseling office in the school or program of their prospective major.

ADMISSIONS SELECTION

UCI seeks to select students who have a demonstrated record of academic and personal achievement. The primary criterion for admission to UCI is academic excellence, including the number of college preparatory courses completed; the level of achievement in these courses, including honors, Advanced Placement, International Baccalaureate, and college courses completed; and the quality of the senior-year program as measured by the type and number of academic courses in progress or planned. Also considered are the high school grade point average (GPA) calculated on UC-specified subjects (UCI uses a maximum of eight honors grade points in determining the UC GPA) and the required standardized national examinations.



The level of performance needed to gain admission varies from year to year depending on the size and the academic quality of the applicant pool and the number of enrollment spaces.

A secondary criterion in UCI's selection process is personal achievement outside the classroom. A range of pursuits is considered, including academic activities, the creative and performing arts, community service and leadership, athletics, participation in pre-collegiate programs that develop academic ability, and other extracurricular activities. Persistence counts more than scattered involvement, while initiative and curiosity are also important.

The admissions process at UCI is also sensitive to individual circumstances and the effect these may have had on the resources available to and the experiences of applicants. While all applications receive careful consideration, reviewers take note of any extenuating circumstances and/or a variety of cultural and economic situations, including students who are the first in their families to attend college, who have a low family income, or who have worked in support of their family during high school. The emphasis, however, is less on the personal circumstances of the applicant and focuses instead on how the applicant has responded to challenges while achieving academic success.

Each application is read at least once and many are read twice. Every attempt is made to become familiar with the unique accomplishments of each applicant.

Students interested in the majors below should be aware of the following provisions.

Dance and **Music:** Applicants to either Dance or Music must audition and be selected by faculty. Applicants to the Music major will be invited for a campus audition after being selected through a prescreening process involving submission of a statement and an audition recording on CD or DVD. NOTE: Freshmen may not apply directly to the B.Mus. degree program.

Engineering: Applicants to any of the Engineering majors must complete four years of high school mathematics through pre-calculus or math analysis and are advised to have completed one year each of physics and chemistry.

Computer Science and Engineering (offered jointly by the Donald Bren School of Information and Computer Sciences and The Henry Samueli School of Engineering): Applicants must complete four years of high school mathematics through pre-calculus or math analysis and are advised to have completed one year each of chemistry and physics. One year of programming course work is also advised. (This requirement does not apply to other majors offered by the Donald Bren School of Information and Computer Sciences.)

Nursing Science: Admission to the Nursing Science major is limited and selective. Applicants must complete two years of laboratory science providing fundamental knowledge in two of these three core disciplines: biology, chemistry, and physics. Advanced laboratory science classes that have biology, chemistry, or physics as prerequisites and offer substantial additional material may be used to fulfill this requirement. The final two years of an approved three-year integrated science program (ISP) may be used to fulfill this requirement. Students must earn C's or higher in order to fulfill their subject requirements. Students with the highest combination of overall grade point average, grade point average in science courses, and scores on the SAT or ACT examinations will be given priority. Applicants to the Nursing Science major must submit a supplemental application.

MINIMUM ADMISSION REQUIREMENTS FOR FRESHMEN

The University defines a freshman applicant as a student who has graduated from high school or completed a California Certificate of Proficiency, or the General Educational Development (GED) examination, and who has not enrolled in a regular session of any collegiate-level institution. Summer sessions are excluded in the determination.

Freshman applicants who are not residents of California should refer to the Nonresident Admission Requirements section.

Applicants who do not meet the requirements for admission at the time of high school graduation may be considered for admission after they meet the requirements for admission as a transfer applicant (see Admission as a Transfer Applicant). Transfer credit will be granted for an acceptable course from an accredited college or university taken while still in high school if reported on a valid transcript issued by the college which conducted the course.

The requirements described below represent the minimum academic standards students must attain to be eligible for admission to the University. Meeting minimum eligibility requirements does not guarantee admission. Admission to UCI and the program of choice often requires students to meet more demanding standards.

California Residents

There are three paths to satisfying the University's minimum admission requirements for freshmen students: Eligibility in the Statewide Context, Eligibility in the Local Context (ELC), and Eligibility by Examination Alone.

Eligibility in the Statewide Context

Eligibility in the Statewide Context is the pathway by which most students attain UC eligibility. To be Eligible in the Statewide Context, students must receive a high school diploma or equivalency and satisfy the Subject, Scholarship, and Examination Requirements described below by the date of high school graduation.

UC Subject Requirement

To satisfy the UC Subject Requirement, students must complete the 15 yearlong high school courses described below. These courses are also known as the "a–g" subjects. (A one-year course is equal to one unit; a one-semester course is equal to one-half unit.) At least seven of the 15 yearlong courses must be taken during the last two years of high school.

Students who will be applying for admission for fall 2012 or beyond must complete 11 of the 15 "a–g" courses by the end of their junior year.

California High School Students: Courses taken to fulfill the Subject Requirement must be certified by the University as meeting the requirement and must be included on the UC-certified course list of the school the student attended. The high school counselor or principal will have a copy of this list. In addition, the lists are available online at http://www.ucop.edu/doorways.

The UCI Office of Admissions and Relations with Schools will review and accept courses that meet the requirements for applicants graduating from out-of-state schools.

Required "a–g" Courses

a. **History/Social Science: 2 years required.** Two years of history/social science, including one year of world history, cultures, and geography; and one year of U.S. history or one-half year of U.S. history and one-half year of civics or American government.

b. **English: 4 years required.** Four years of college-preparatory English that include frequent and regular writing, and reading of classic and modern literature. No more than one year of ESL-type courses can be used to meet this requirement.

c. **Mathematics: 3 years required; 4 years recommended.** Three years of college-preparatory mathematics that include the topics covered in elementary and advanced algebra and two- and three-dimensional geometry. Approved integrated math courses may be used to fulfill part or all of this requirement, as may math courses taken in the seventh and eighth grades that are accepted by the high school as equivalent to its own math courses.

d. **Laboratory Science: 2 years required; 3 years recommended.** Two years of laboratory science providing fundamental knowledge in at least two of these three foundational subjects: biology, chemistry, and physics. Advanced laboratory science classes that have biology, chemistry, or physics as prerequisites and offer substantial additional material may be used to fulfill this requirement, as may the final two years of an approved three-year integrated science program that provides rigorous coverage of at least two of the three foundational subjects.

e. **Language Other Than English: 2 years required; 3 recommended.** Two years of the same language other than English. Courses should emphasize speaking and understanding, and include instruction in grammar, vocabulary, reading, composition and culture. Courses in languages other than English taken in the seventh and eighth grades may be used to fulfill part of this requirement if accepted by the high school as equivalent to its own courses. (Students are strongly encouraged to complete three or four years of one language in preparation for the UCI Language Other Than English and/or the International/Global Issues general education requirements.)

f. **Visual and Performing Arts (VPA): 1 year required.** A single yearlong approved arts course from a single VPA discipline: dance, drama/theatre, music, or visual arts.

g. **College Preparatory Electives: 1 year required.** One year (two semesters), in addition to those required in "a–f" above, chosen from the following areas: visual and performing arts (non-introductory-level courses), history, social science, English, advanced mathematics, laboratory science, and language other than English (a third year in the language used for the "e" requirement or two years of another language).

Courses Satisfying the "g" Requirement

History: All history courses should require extensive reading and writing. Courses should enable students to establish a breadth of understanding of history (for example, world history, political history, or economic history) and should provide an understanding of the human past, including its relation to the present. Courses should develop a student's critical thinking, ability to evaluate historical data, and ability to analyze and synthesize evidence.

Social Science: Courses should be in one of the social sciences: anthropology, economics, geography, political science, psychology, or sociology, or, alternatively, courses should be interdisciplinary, drawing knowledge from two or more of these fields. Course objectives should include as many of the following as are applicable to the field: (1) to understand the development and basic features of major societies and cultures, (2) to examine the historic and contemporary ideas that have shaped the world, (3) to understand the fundamentals of how differing political and economic systems function, (4) to examine the nature and principles of individual and group behavior, and (5) to study social science methodologies.

In order to develop a student's critical thinking, ability to evaluate ideas and information, and ability to analyze and synthesize qualitative and quantitative evidence in the laboratory and in the field, a social science course must include a body of basic knowledge, extensive reading, and written and oral exposition.

Courses which are designed to meet state-mandated social studies graduation requirements are acceptable provided that they meet the above criteria. Courses of an applied, service, or vocational character are not acceptable social science electives.

English: All English courses should require substantial reading with frequent and extensive practice in writing which is carefully evaluated and criticized. A course in creative writing, journalism, speech, or debate is acceptable if it meets the general requirements in reading and writing stated above. An advanced-level course in English as a Second Language (ESL) or English Language Development (ELD) may be acceptable provided it meets the standards outlined under the "b" requirement.

Advanced Mathematics: Acceptable electives are courses in mathematics with second-year algebra as a prerequisite such as trigonometry, linear algebra, precalculus (analytic geometry and mathematical analysis), calculus, and probability and statistics.

A computer science course is an acceptable mathematics elective if it fulfills the following objectives. The course should enable each student to express algorithms in a standard computer language such as C++, Pascal, Java, BASIC, FORTRAN, or COBOL. By the end of the course, each student should complete substantial programming projects in the language used. The course should also involve the study and mastery of various aspects of computer science: how computers deal with data and instructions, the internal components of a computer, and the underlying computer logic.

Laboratory Science: Acceptable courses should cover topics from the biological or physical sciences in which students make their own observations and measurements and analyze these data to obtain further information.

An introductory science course normally offered in the ninth grade, (such as earth science or physical science) is an acceptable science elective provided it is designed to prepare students for laboratory science courses in the tenth grade and beyond. The course must provide an introduction to the fundamental principles of physical and/or biological science. Laboratory activities as defined above shall be included. (A terminal course designed only to meet graduation requirements is not an acceptable science elective.)

Language Other Than English: It is recommended that elective courses be in the same language used to satisfy the language other than English "e" subject requirement. Elective courses in this language must have at least two years of the language as a prerequisite. In order for a second language to qualify as an elective, at least two years of this language must be completed.

Visual and Performing Arts: Courses in this area consist of instruction in dance, drama/theatre, music, and visual arts. Courses should enable students to understand and appreciate artistic expression and, where appropriate, to talk and write with discrimination about the artistic material studied.

Courses devoted to artistic performance and developing creative artistic ability should have prerequisites (either one year of introductory course work or experience approved by the instructor) and should assume proficiency beyond the introductory level.

Courses must require on average the equivalent of a five-period class per week. Work outside of class must be required; for example, portfolio/performance preparation, reading, writing, research projects, and/or critical listening/viewing.

Dance courses offered for physical education credit or under any other departmental arrangement are acceptable provided they include content satisfying the above criteria.

Courses which are primarily athletic or body conditioning are not acceptable visual and performing arts electives.

College Preparatory Electives: The general objectives of the "g" requirement are to improve students' analytical abilities, promote artistic development, and strengthen oral and written skills. The requirement is intended to encourage prospective University students to fill out their high school programs with courses that (1) strengthen general study skills, particularly analytical reading, expository writing, and oral communication; (2) provide an opportunity to begin work that could lead directly into a major program of study at the University; (3) experience, at some depth, new areas of academic disciplines that might form the basis for future major or minor studies at the University.

Courses that fulfill the "g" requirement should allow students to prepare for college-level work in the subject area, so that the level attained at the end of such courses would be well beyond the introductory or survey level. Courses that have narrow objectives aimed at meeting specific societal or personal lifestyle goals are not acceptable.

Examination Requirements

All freshman applicants must submit examination scores as described below. *Students applying for admission for fall quarter should complete their examination requirements during May or June of their junior year or during their senior year, but no later than the December test date. (Typically, this means that students will take either the SAT Reasoning Test or the ACT Assessment plus Writing Test in October or November, and will take the SAT Subject Tests in November or December.)* Scores earned prior to March 2005 will not be accepted. Applicants must ensure that reports for all scores have been submitted directly to the UCI Office of Admissions and Relations with Schools.

All students applying for freshman admission must submit the following test scores:

The SAT Reasoning Test or the ACT Assessment plus Writing. The critical reading, mathematics, and writing scores on the SAT must be from the same sitting. Students who take the ACT must report their scores on each section as well as their composite score.

Two SAT Subject Tests in two different areas, chosen from the following: English, history and social studies, mathematics (Level 2 only), science, or language other than English.

More information about these examinations is available online. For the SAT Reasoning and Subject Tests, see http://www.collegeboard.com. For the ACT Assessment plus Writing, see http://www.act.org.

Do not use the score choice option to withhold reporting of SAT Subject Test scores. UC considers only a student's highest SAT Subject Test scores so there is no advantage to withholding scores. NOTE: The Henry Samueli School of Engineering recommends that freshmen applicants in Engineering majors (including the joint CSE major) take the SAT Subject Test in math Level 2 as one of their required subject examinations.

Scholarship Requirement

The Scholarship Requirement defines the grade point average (GPA) students must attain in the required "a–g" subjects and the scores they must earn on the SAT Subject Tests and ACT Assessment or SAT Reasoning Test to be eligible for admission to the University.

The University uses an Eligibility Index—a combination of GPA and test scores—to determine if an applicant meets the Scholarship Requirement. The minimum GPA is 3.0 for California residents and 3.4 for nonresidents. The Eligibility Index is available in a section below as well as online at http://www.universityofcalifornia.edu/admissions/scholarshipreq.

Students applying for admission for fall 2012 or beyond should refer to the URL above for the appropriate eligibility calculator.

Grade Point Average

To determine a student's eligibility, the University calculates the GPA in the "a–g" subjects by assigning point values to the grades a student earns, totaling the points, and dividing the total by the number of "a–g" course units. Points are assigned as follows: A = 4 points, B = 3 points, C = 2 points, D = 1 point, and F = 0 points. (Pluses and minuses are not calculated in the grade point average.)

Only grades the student earns in "a–g" subjects in grades 10–11, including summer sessions, are used to calculate the preliminary GPA. Courses taken in the ninth grade can be used to meet the Subject Requirement if the student earns a grade of C or better, but they will not be used to calculate the GPA.

Students can see whether they meet the Scholarship Requirement by referring to the UC Eligibility Index or using the eligibility calculator located at http://www.universityofcalifornia.edu/admissions/undergrad_adm/paths_to_adm/freshman/scholarship_reqs.html.

Honors Courses: The University assigns extra points for up to eight semesters of University-certified honors-level and Advanced Placement courses taken in the last three years of high school: A=5 points, B=4 points; C=3 points. No more than two yearlong UC-approved honors-level courses taken in the tenth grade may be given extra points. A grade of D in an honors or Advanced Placement course does not earn extra points.

The courses must be in the following "a–g" subjects: history/social science, English, advanced mathematics, laboratory science, language other than English, and visual and performing arts. Also, they must be certified as honors courses by the University. In these subjects, as well as in computer science, acceptable honors-level courses include Advanced Placement courses, Higher Level and designated Standard Level International Baccalaureate courses, and college courses that are transferable to the University.

D and F Grades: If a D or F was earned in an "a–g" course, the course must be repeated with a grade of C or better in order to apply it toward the Subject Requirement. The original D or F grade will not be included in the GPA calculation, and the new grade will be used. If a student repeats a course in which a grade of C was initially earned, the second grade will not be used.

Eligibility in the Local Context

Under the Eligibility in the Local Context (ELC) pathway, the top four percent of students at each participating California high school can be designated UC-eligible.

To be considered for ELC, students must complete 11 specific units of the Subject Requirements by the end of the junior year.

The 11 units include one year of history/social science, three years of English, two years of mathematics, one year of laboratory science, one year of language other than English, and three years

selected from among the other "a–g" requirements. Please note that students are not required to have completed course work within visual and performing arts (dance, drama/theatre, music, or visual arts) by the end of the junior year to qualify for ELC.

With the assistance of each participating high school, the University will identify the top four percent of students on the basis of GPA for UC-approved course work completed in the tenth and eleventh grades.

The University will notify ELC students of their status at the beginning of their senior year. ELC-identified students must submit the University's undergraduate application during the November filing period and complete remaining eligibility requirements, to be considered fully eligible. Fully eligible ELC students are guaranteed a spot at one of UC's undergraduate campuses, though not necessarily at a first-choice campus.

Comprehensive information about ELC is available online at http://www.ucop.edu/sas/elc/.

UC Score Total

To determine whether a student has met the Scholarship Requirement for Eligibility in the Statewide Context, use the preliminary eligibility calculator at http://www.universityofcalifornia.edu/admissions/scholarshipreq. Alternatively, use the translation table below to find equivalent "UC Scores" for each of the student's SAT or ACT scores, then follow the instructions below the table.

Test Score Translation Table

ACT Score	SAT Score	UC Score	ACT Score	SAT Score	UC Score
36	800	100	21	500	50
	790	98		490	48
35	780	97	20	480	47
	770	95		470	45
34	760	93	19	460	43
	750	92		450	42
33	740	90	18	440	40
	730	88		430	38
32	720	87	17	420	37
	710	85		410	35
31	700	83	16	400	33
	690	82		390	32
30	680	80	15	380	30
	670	78		370	28
29	660	77	14	360	27
	650	75		350	25
28	640	73	13	340	23
	630	72		330	22
27	620	70	12	320	20
	610	68		310	18
26	600	67	11	300	17
	590	65		290	15
25	580	63	10	280	13
	570	62		270	12
24	560	60	9	260	10
	550	58		250	8
23	540	57	8	240	7
	530	55		230	5
22	520	53	7	220	3
	510	52		210	2
			1-6	200	0

If a student took the SAT Reasoning Test: The University converts a student's highest scores in critical reading, math, and writing from a single sitting and adds them to the student's two highest SAT Subject Test scores from two different subject areas equivalent to UC Scores (see the translation table above). Then, all five UC Scores are added together to produce the student's UC Score Total (critical reading + math + writing + subject test 1 + subject test 2).

If a student took the ACT plus its Writing exam: The University takes the student's highest math, reading, science, and combined English/writing score from a single sitting and converts them to UC Scores (see the translation table above). To give the ACT writing component equal weight to the SAT writing exam, the University multiplies the sum of the student's converted math, reading, and science scores by two-thirds, then adds the converted English/writing score. This subtotal is then added to the student's two highest SAT Subject Test scores from two different subject areas, which are also converted to equivalent UC Scores, to reach the UC Score Total ([math + reading + science] x 0.667 + English/ writing + subject test 1 + subject test 2).

The following table lists the combinations of GPA and UC Score Totals that meet UC's minimum requirements.

UC Eligibility Index

CALIFORNIA RESIDENTS

"a–g" GPA	Minimum UC Score Total	"a–g" GPA	Minimum UC Score Total
< 3.00	ineligible	3.25–3.29	165
3.00–3.04	223	3.30–3.34	157
3.05–3.09	210	3.35–3.39	152
3.10–3.14	198	3.40–3.44	147
3.15–3.19	187	3.45 and above	143
3.20–3.24	175		

NON-CALIFORNIA RESIDENTS

< 3.40	ineligible
3.40–3.44	147
3.45 and above	143

Eligibility By Examination Alone

A student who does not meet the requirements for Eligibility in the Statewide Context, or ELC, may qualify for admission to the University by earning high scores on the ACT Assessment plus Writing or SAT Reasoning Test, and two SAT Subject Tests.

To qualify this way, the student must achieve a minimum UC Score Total—calculated according to the UC Eligibility Index instructions above—of 410 (425 for nonresidents). In addition, the student must earn a minimum UC Score of 63 on each component of the ACT or SAT Reasoning Test and on each SAT Subject Test.

Students may not use an SAT Subject Test to meet these requirements if they have completed a transferable college course in that subject with a grade of C or better.

Admission as a Transfer Applicant

The University defines a transfer applicant as a student who has completed high school and who has been a registered student in another college or university or in college-level extension classes other than a summer session immediately following high school graduation. UCI considers a California community college transfer applicant as a student who has completed at least 30 semester units/45 quarter UC-transferable units at one or more California community colleges. A transfer applicant may not disregard the college record and apply for admission as a freshman. (Transfer applicants who are not residents of California should also refer to the section on Nonresident Admission Requirements.)

Transfer Admission Guarantee: UCI's Transfer Admission Guarantee (TAG) program offers provisional admission to well-qualified junior-level students from participating California community colleges. Although admission to UCI is selective in most majors, through TAG, admission can be guaranteed for transfer students who meet the TAG Eligibility and major prerequisites requirements (see TAG Selection Guidelines later in this section).



SELECTION CRITERIA

UCI attempts to accommodate as many qualified transfer applicants as possible. Priority consideration for admission of transfer applicants is given to junior-level applicants (with a minimum of 60 semester/90 quarter units of transferable credit) from California community colleges and is based upon: (1) GPA in transferable courses; (2) depth of preparation toward general education and major requirements; and (3) participation in the TAG (Transfer Admission Guarantee) program, which requires early completion of one transferable English composition course, and one transferable course in mathematical concepts and quantitative reasoning. Applicants with the strongest academic performance will be the most competitive for admission. Junior transfers from four-year colleges, including other UC campuses, and lower-division transfers will be considered as space permits. *Applicants for fall quarter admission must complete required English composition and mathematics courses by the end of the spring term.*

In the case that UCI is unable to accommodate all qualified applicants in their first-choice major, those students who indicate a valid alternate major may be offered admission in that major. Students who wish to change their major after enrolling at UCI must submit an Undergraduate Petition for Change of Major to the academic counseling office in the school or program of their prospective major. This is of particular importance to those who apply in majors which are subject to additional course prerequisites and/or have a limit placed on the number of applicants admitted into the major. (See the following list.)

Some transfer applicants are selected based upon consideration of the academic criteria in conjunction with the following personal achievement criteria: an exceptionally challenging curriculum; outstanding accomplishments relevant to academic aims; hardships or unusual circumstances the applicant has faced, and the ways in which the student has responded to these challenges; a strong, thoughtful match between UCI's programs and the student's academic and career objectives, preparation, talents, and skills; and potential contributions to the campus. The level of performance needed to gain admission varies from year to year depending on the size and the academic quality of the applicant pool and the number of enrollment spaces.

Transfer applicants to the majors listed below must complete prerequisite courses for the major as specified.

Biological Sciences: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Biological Sciences major. All applicants must complete one year of general chemistry with laboratory with grades of B or better; one year of biology courses equivalent to Biological Sciences 93, 94, and 100L at UCI with a grade of C or better in each course; and have a cumulative GPA of 3.0 or higher.

Biomedical Computing: Applicants who satisfactorily complete the following course requirements will be given preference for admission: (1) one year of discrete mathematics or one year of calculus, preferably both (a semester of pre-calculus and a semester of calculus are not sufficient to satisfy this requirement); (2) one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language; (3) one year of introductory physics and corresponding labs covering at least the concepts of units, vectors, motion, force, energy; momentum, rotation, gravity, electricity, and magnetism; and (4) an introductory biology course covering at least the concepts of genetics, replication and expression of DNA, cell division, gene transmission, mutation, and recombination in diploid organisms. See the Donald Bren School of Information and Computer Sciences section of this *Catalogue* for information on preferred courses and specific requirements for transfer applicants.

*Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Transfer students must enter UCI with knowledge of Java since it is used in many of the lower-division Biomedical Computing requirements and serves as a foundation for upper-division programming-related courses.

Additional courses beyond the those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree. Knowledge of basic concepts in molecular biology is also highly recommended.

Business Administration: Junior-level applicants with the highest grades overall (minimum cumulative GPA of 3.0) and who satisfactorily complete lower-division courses equivalent to UCI's calculus (Mathematics 2A-B), economics (Economics 20A-B), and statistics and accounting (Management 7, 30A, 30B) will be given preference for admission. Management 10 may be completed at UCI. Admission to the major will be competitive due to limited space availability.

Business Information Management: Junior-level applicants who satisfactorily complete the following requirements will be given preference for admission: (1) one year of discrete mathematics if available; if not, first-year-calculus; (2) one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language; and (3) courses equivalent to Economics 20A-B (basic economics) and Management 30A, 30B.

*Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree.

The Business Information Management major is offered jointly by the Donald Bren School of Information and Computer Sciences and The Paul Merage School of Business.

Chemistry: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Chemistry major. All applicants must complete the following required courses: one-year of general chemistry with laboratory, and one year of approved calculus.

Computer Science and Engineering: Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer, including one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of programming with at least one course in object-oriented programming (Java recommended), and one additional approved transferable course for the major (an approved math, science, or CSE course). Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Donald Bren School of Information and Computer Sciences at (949) 824-5156 or The Henry Samueli School of Engineering at (949) 824-4334.

Criminology, Law and Society: Applicants may be subject to additional screening.

Dance: Applicants must audition and be selected by faculty.

Earth and Environmental Sciences: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Earth and Environmental Sciences major. All applicants must complete the following required courses: one year of calculus and one year of *either* general chemistry with laboratory or calculus-based physics with laboratory.

Earth and Environmental Studies: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Earth and Environmental Studies major. All applicants must complete the following required courses: one year of *either* general chemistry with laboratory or biology with laboratory.

Ecology and Evolutionary Biology: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Ecology and Evolutionary Biology major. All applicants must complete one year of general chemistry with laboratory with grades of B or better; one year of biology courses equivalent to Biological Sciences 93, 94, and 100L at UCI with a grade of C or better in each course; and have a cumulative GPA of 3.0 or higher.

Economics: Transfer applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the majors in Economics, Business Economics, and Quantitative Economics. All applicants must complete the following required courses: one course in microeconomics, one course in macroeconomics, and one year of first-year calculus.

Engineering: Applicants must select either Aerospace Engineering, Biomedical Engineering, Biomedical Engineering: Premedical, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering (a general program of study which is open to upper-division students only), Environmental Engineering, Materials Science Engineering, Mechanical Engineering, or Engineering Undeclared (option for freshmen only) as their major on the application. Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete the following required courses: one year of approved calculus, one year of calculus-based physics with laboratory for engineering and physics majors, additional courses as specified by the major, and completion of lower-division writing. Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. See The Henry Samueli School of Engineering section of this *Catalogue* for information on courses required for each major.

See also the listing for **Computer Science and Engineering,** a major jointly administered by the The Henry Samueli School of Engineering and the Donald Bren School of Information and Computer Sciences.

Humanities (all majors in the School): Applicants must have completed the UC Entry Level Writing requirement.

Information and Computer Sciences: Applicants must select either Computer Science, Informatics, or Information and Computer Science as their major on the application. Junior-level applicants who satisfactorily complete course prerequisites will be given preference for admission. CS and ICS majors must complete one year of discrete mathematics if available, if not, first-year calculus; Informatics majors must complete one college-level mathematics course such as logic, boolean algebra, statistics, or calculus and at least one year of college-level courses in English composition, academic writing, research writing, or technical writing. All applicants must complete one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language.

*Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree reuirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree.

See the Donald Bren School of Information and Computer Sciences section of this *Catalogue* for information on preferred courses and specific requirements for transfer applicants to each major.

See also the listings for **Biomedical Computing**; **Business Information Management,** a collaborative major between the Donald Bren School of ICS and The Paul Merage School of Business; and **Computer Science and Engineering,** a major jointly administered by the Donald Bren School of ICS and The Henry Samueli School of Engineering.

Mathematics: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Mathematics major. All applicants must complete one year of approved calculus.

Music: Applicants must audition and be selected by faculty. NOTE: Second-year transfer students may not apply directly to the B.Mus. degree program.

Nursing Science: Admission to the major is limited and selective. Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Nursing Science major. All applicants must complete the following with grades of B or better: (1) one year of general chemistry with laboratory and one quarter/semester of organic chemistry, and (2) one year of biological sciences course work in addition to a course in DNA and a course in genetics equivalent to UCI's Biological Sciences 93 and 97. Applicants must have a cumulative GPA of 3.0 or higher to be considered.



Physics: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Physics major. All applicants must complete the following required courses: one year of approved calculus and one year of calculus-based physics with laboratory for engineering and physics majors.

Psychology and Social Behavior: Applicants may be subject to additional screening.

Public Health: Junior-level applicants with the highest grades overall and who satisfactorily complete lower-division requirements will be given preference for admission to the Public Health majors. All applicants to the B.S. degree in Public Health Sciences must have a minimum overall GPA of 3.0 and a minimum GPA of 3.0 in required courses, must complete one year of general biology and one year of general chemistry with laboratory, and complete one year of courses equivalent to UCI's Biological Sciences 93 and 97. All applicants to the B.A. degree in Public Health Policy must have a minimum overall GPA of 3.0 and a minimum GPA of 3.0 in required courses, and complete one year of courses in anthropology, economics, sociology, and/or psychology.

TRANSFER STUDENT ADMISSION REQUIREMENTS

The University of California requirements for admission as a transfer applicant vary according to the high school record. Transfer applicants who have completed a California Certificate of Proficiency or the equivalent must also meet regular University entrance requirements.

Transfer applicants should also refer to the section on Information for Transfer Students: Fulfilling Requirements for a Bachelor's Degree.

The transcript submitted from the last college attended must show, as a minimum, that the student was in good standing and had earned a GPA of 2.0 or better in all transferable course work.

A transfer applicant must also meet **one** of the following conditions:

1. If a student was eligible for admission to the University when the student graduated from high school—meaning that the student satisfied the Subject, Scholarship, and Examination Requirements or was identified by the University as eligible under the Eligibility in the Local Context (ELC) program and completed the Subject and Examination Requirements in the senior year—the student is eligible to transfer if he or she has a C (2.0) average in transferable college course work and has met the prerequisites for his or her major.
2. If a student met the Scholarship Requirement in high school but did not satisfy the Subject Requirement, the student must take transferable college courses in the missing subjects, earn a grade of C or better in each of these required courses, and earn an overall C (2.0) average in all transferable college course work to be eligible to transfer.
3. Students who were not eligible for admission to the University when they graduated from high school because they did not meet the Scholarship Requirement must:
   a. Complete 60 semester (90 quarter) units of transferable college credit with a grade point average of at least 2.4 (no more than 14 semester (21 quarter) units may be taken Pass/Not Pass), **and**
   b. Complete the following course pattern requirement, earning a grade of C or better in each course:
      i. Two transferable college courses (3 semester or 4–5 quarter units each) in English composition; **and**
      ii. One transferable college course (3 semester or 4–5 quarter units) in mathematical concepts and quantitative reasoning; **and**
      iii. Four transferable college courses (3 semester or 4–5 quarter units each) chosen from at least two of the following subject areas: the arts and humanities, the social and behavioral sciences, and the physical and biological sciences.

      NOTE: For UCI, in fulfilling items i and ii, applicants for fall should complete the courses in English and mathematics no later than the spring term.

TRANSFER ADMISSION GUARANTEE (TAG) REQUIREMENTS

Highest admission priority is extended to California community college applicants who will have completed 60 transferable semester (90 quarter) units by the quarter they intend to enter UCI (fall or winter). A TAG community college applicant is defined as a student: (1) who was enrolled at one or more California community colleges for a least two terms, excluding summer sessions; (2) for whom the last college attended before admission to a UC campus was a California community college, excluding summer sessions; and (3) who has completed at least 30 semester (45 quarter) UC-transferable units at one or more California community colleges.

Students may be eligible for admission to UCI through TAG if they meet **all four** of the following requirements: (1) completion of 60 transferable semester (90 quarter) units by the end of the quarter prior to enrolling at UCI (units must be completed by spring 2011 for fall 2011) and attainment of at least the minimum GPA specified by the major. TAG details are available online at http://www.admissions.uci.edu/tag.html; (2) completion of the minimum UC transfer eligibility requirements in English (two courses) and transferable mathematics (one course). The first English and mathematics courses must be completed at the time of the TAG submission. The second English course must be completed by **spring 2011 for fall 2011;** (3) completion of additional requirements for the student's prospective major (s) at UCI, *prior to* enrolling at UCI (major requirements to be completed spring 2011 for fall 2011); and (4) maintained UC eligibility.

NOTE: The majors in Arts and Humanities, Business Administration, Dance, General Engineering, Humanities and Arts, Music, Nursing Science, and Pharmaceutical Sciences do not participate in the TAG program for fall 2010.

ADMISSION FOR A SECOND BACHELOR'S DEGREE

A student whose educational objective has changed substantially after receiving the bachelor's degree may be considered for admission to a program for a second degree. Admission as a candidate for a second bachelor's degree requires that the applicant be fully eligible for admission to the University and have strong promise of academic success in the new major. All such admissions are subject to the approval of the dean or director of the UCI school or program in which the second degree will be earned.

Students who have *not* attended UCI as undergraduates during a regular academic quarter should complete the undergraduate application for admission and scholarships, available online at http://www.universityofcalifornia.edu/apply. Students who have attended UCI as undergraduates during a regular academic quarter should contact the Academic Advising Office of the major of interest to initiate the electronic Second Baccalaureate/Readmission Process. For more information, see http://www.reg.uci.edu/enrollment/readmission.html.

Nonresident Admission Requirements

Admission requirements for applicants who are not California residents vary slightly from requirements for California residents. However, all nonresident freshman and transfer applicants are subject to the same selection criteria as California residents, as explained in a previous section. Refer to the Expenses and Fees section for information regarding residence classification for tuition purposes and the Nonresident Tuition Fee.

NONRESIDENT FRESHMAN APPLICANT

A nonresident freshman applicant must (1) graduate from a regionally or state-accredited high school, or complete an appropriate proficiency examination; (2) complete satisfactorily the "a–g" pattern of subject requirements listed under requirements for California residents; (3) earn a grade point average of at least 3.4 or higher in the required high school subjects (3.0 is equal to a B average); (4) meet the examination requirement: either the ACT Assessment plus Writing Test *or* the SAT Reasoning Test (critical reading, mathematics, and writing). In addition, all applicants must complete two SAT Subject Tests in two different areas: English, history and social studies, mathematics (Level 2 only), science, or language other than English; and (5) meet the Eligibility Index for nonresidents.

NONRESIDENT TRANSFER APPLICANT

The minimum admission requirements for nonresident transfer applicants are the same as those for residents, except that nonresidents must have a grade point average of 2.8 or higher in all transferable college course work.

ADMISSION OF INTERNATIONAL STUDENTS

The credentials of an international undergraduate applicant—a student who holds or expects to hold a student, exchange, visitor, or diplomatic visa and who wishes to attend school in the United States—are evaluated in accordance with the general regulations governing admission. The application should be submitted to the University of California Undergraduate Application Processing Service early in the appropriate application filing period. This will allow time for exchange of necessary correspondence and, if the applicant is admitted, will help the student in obtaining the necessary passport visa. Official certificates and detailed transcripts of records should be submitted directly to the UCI Office of Admissions and Relations with Schools only when requested.

International applicants whose native language is not English will be required to demonstrate their English proficiency. This is most often accomplished by achieving a minimum score of 550 (paper-based) or 213 (computer-based) or 80 (Internet-based) on the Test of English as a Foreign Language (TOEFL), or with a score of 7 (academic module) on the International English Language Testing System (IELTS) examination. Arrangements to take the TOEFL may be made by writing directly to TOEFL/TSE Services Educational Testing Service, P.O. Box 6151, Princeton, NJ 08541-6151, USA; (609) 771-7100; http://www.toefl.org/. For information about the IELTS test, see http://www.ielts.org/. Students must ask the Educational Testing Service or IELTS to forward results of their tests to the UCI Office of Admissions and Relations with Schools. Completion of an *acceptable* English composition course (as determined by the Office of Admissions and Relations with Schools) with a grade of C or better will also clear the English proficiency requirement for international applicants.

Students who wish to improve their English proficiency to meet the TOEFL or IELTS requirement may enroll in the intensive Program in English as a Second Language sponsored by UC Irvine Extension. Information is available from English and Certificate Programs for Internationals, UC Irvine Extension, P.O. Box 6050, Irvine, CA 92616-6050; (949) 824-5991.

In addition to achieving a minimum TOEFL or IELTS score, all international students whose native language is other than English must take an Academic English/English as a Second Language Placement Test upon arrival and prior to registration. Based upon the results of this test, students may be required to improve certain language skills by enrolling in Academic English/English as a Second Language courses during their first year, with other major course work being adjusted accordingly.

Generally, financial assistance and scholarships from the University are not available to the nonimmigrant-visa student. International students must provide proof that sufficient funds will be available to meet their educational commitments while studying in the United States. International undergraduate students are considered as nonresidents of California and are required to pay nonresident tuition in addition to fees paid by legal residents of California.

Please direct all inquiries regarding the undergraduate admission of international students to the Office of Admissions and Relations with Schools.

ENGLISH LANGUAGE PROFICIENCY OF PERMANENT RESIDENT, REFUGEE, AND INTERNATIONAL (F-1 VISA) STUDENTS: ACADEMIC ENGLISH/ENGLISH AS A SECOND LANGUAGE

Any student (a) whose first or native language is not English, (b) whose verbal scores on the Writing section of the SAT Reasoning Test fall below a set level, (c) who has not satisfied the UC Entry Level Writing requirement, *and* (d) who has received a letter from the AE/ESL Program requiring them to take the AE placement test, or any such student without a verbal SAT Reasoning Test score, must take the AE placement test prior to the first quarter of enrollment, regardless of the student's TOEFL (Test of English as a Foreign Language) score, IELTS (International English Language Testing System) score, or TSWE (Test of Standard Written English) score. Also, any student who is identified as an ESL student through the UC Analytical Writing Placement Examination must take the AE placement test. The test is given prior to the beginning of each quarter, during Welcome Week prior to the beginning of fall quarter instruction, and on dates to be announced. Information is available from the Academic Testing Center, telephone (949) 824-6207, and the Academic English/English as a Second Language Program, telephone (949) 824-6781.

Based upon the results of the test, students may be required to enroll in AE/ESL courses prior to enrolling in any other required writing courses. Students required to enroll in AE/ESL courses

College Board Advanced Placement

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
Art			
Art History	3	8	One course toward Art History major, minor, category IV of the UCI GE requirement from the Art History 40 or 42 series, and satisfaction of category VIII, plus 4 units of elective credit; may not replace School of Humanities requirements.
	4 or 5	8	Two courses toward Art History major, minor, category IV of the UCI GE requirement from the Art History 40 or 42 series, and satisfaction of category VIII; may not replace School of Humanities requirements.
Studio Art[1]			
Drawing	3, 4, or 5	8	Elective credit only.
Two-Dimensional Design Portfolio	3, 4, or 5	8	Elective credit only.
Three-Dimensional Design Portfolio	3, 4, or 5	8	Elective credit only.
Biology	3, 4, or 5 (Non-Biological Sciences Majors)	8	One Biological Sciences course toward category II of the UCI GE requirement.
	3 (Biological Sciences Majors)	8	Elective credit only.
	4 or 5	8	Elective credit only.
Chemistry	3	8	Elective credit only.
	4 or 5	8	Chemistry 1A plus 4 units of elective credit.
Chinese Language[2]	3	4	Course credit awarded following placement examination.
	4 or 5	8	Course credit awarded following placement examination.
Computer Science[3]			
A Exam	3, 4, or 5	2	ICS/CSE 21.
AB Exam	3	4	ICS/CSE 21.
	4 or 5	4	ICS/CSE 21 and 22.
Economics			
Macroeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20B. May not replace School of Social Sciences requirements for the bachelor's degree.
Microeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20A. May not replace School of Social Sciences requirements for the bachelor's degree.
English[1]	3 (on either or both exams)	8	Elective credit only. Fulfills UC Entry Level Writing requirement.
English Composition and Literature English Language and Composition	4 or 5 (on either exam)	8	One course toward category IV of the UCI GE requirement from the English 28 series plus 4 units of elective credit; may not replace Literary Journalism major, English major, minor, or School of Humanities requirements.
	4 or 5 (on both exams)	8	Two courses toward category IV of the UCI GE requirement from the English 28 series; may not replace Literary Journalism major, English major, minor, or School of Humanities requirements.
Environmental Science	3	4	Elective credit only.
	4 or 5	4	Environmental Analysis and Design E8 or Earth System Science 1 or 25.
French			
French Language	3	8	French 1A-B-C. Satisfies category VI of the UCI GE requirement.
	4 or 5	8	French 2A-B-C. Satisfies categories VI and VIII of the UCI GE requirement.
French Literature	3	8	French 1A-B-C. Satisfies category VI of the UCI GE requirement.
	4 or 5	8	French 2A-B-C. Satisfies categories VI and VIII of the UCI GE requirement.
Geography			
Human Geography	3, 4 or 5	4	Elective credit only.
German Language	3	4	German 1A-B-C. Satisfies category VI of the UCI GE requirement.
	4 or 5	8	German 2A-B-C. Satisfies categories VI and VIII of the UCI GE requirement.
Government and Politics			
American Government	3, 4, or 5	4	Elective credit only.
Comparative Government	3, 4, or 5	4	Elective credit only.
History			
European	3, 4, or 5	8	Elective credit only.
United States	3, 4, or 5	8	Elective credit only.
World	3, 4, or 5	8	Elective credit only.
Italian Language	3	4	Italian 1A-B-C. Satisfies category VI of the UCI GE requirement.
	4 or 5	8	Italian 2A-B-C. Satisfies categories VI and VIII of the UCI GE requirement.

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
Japanese Language[2]	3	4	Japanese 1A-B-C. Satisfies category VI of the UCI GE requirement.
	4 or 5	8	Japanese 2A-B-C. Satisfies categories VI and VIII of the UCI GE requirement.
Latin	3 (on one exam)	4	Elective credit only.
Vergil	3 (on both exams)	8	Latin 1A-B-C. Satisfies category VI of the UCI GE requirement.
Literature	4 or 5 (on one exam)	4	Satisfies categories VI and VIII of the UCI GE requirement. Course credit toward the Classics major, Latin major, or School of Humanities language requirement awarded upon petition.
	4 or 5 (on both exams)	8	Satisfies categories VI and VIII of the UCI GE requirement. Course credit toward the Classics major, Latin major, or School of Humanities language requirement awarded upon petition.
Mathematics[1]			
AB Exam	3	4	Elective credit only.
	4 or 5	4	Mathematics 2A.
BC Exam[4]	3	8	Mathematics 2A.
	4 or 5	8	Mathematics 2A-B.
Music Theory	3	8	Elective credit only.
	4 or 5	8	Elective credit only.
Physics[1]			
Exam B	3, 4, or 5	8	Elective credit only.
Exam C, Part I or II	3	4	Elective credit only.
	4 or 5	4	Physics 7A/7LA or Physics 2.
Exam C, Part I (Mechanics)	5	4	Physics 3A.
Exam C, Part II (Electricity and Magnetism)	5	4	Physics 3B.
Psychology	3, 4, or 5	4	Elective credit only.
Spanish[2]			
Spanish Language	3	8	Spanish 1A-B-C. Satisfies category VI of the UCI GE requirement.
	4 or 5	8	Spanish 2A-B-C. Satisfies categories VI and VIII of the UCI GE requirement.
Spanish Literature	3	8	Spanish 1A-B-C. Satisfies category VI of the UCI GE requirement.
	4 or 5	8	Spanish 2A-B-C. Satisfies categories VI and VIII of the UCI GE requirement.
Statistics	3, 4, or 5	4	Statistics 7/Mathematics 7 or Management 7 or Social Ecology 13.

[1] Maximum credit 8 units.
[2] Students who wish to enroll in any Chinese, Japanese, or Spanish course at UCI are still required to take the placement examination (and oral interview, if necessary). Students, however, cannot earn units or grade points in courses from which they have been exempted on the basis of Advanced Placement credit, even if placement results require enrollment in such a level.
[3] Maximum credit 4 units.
[4] Students who take the Calculus BC examination and earn a subscore of 3 or higher on the Calculus AB portion will receive credit for the Calculus AB examination, even if they do not receive a score of 3 or higher on the BC examination.

NOTE: All students should refer to the information about Duplicate Credit on page 44.

must begin satisfying their AE/ESL requirements within their first or second quarter at UCI. They must take these courses in consecutive quarters. The AE/ESL requirements are to be completed within the first six quarters at UCI. Students who have not satisfied the AE/ESL requirements by the end of their sixth quarter will be ineligible to enroll for a seventh quarter at UCI. The UC Entry Level Writing requirement must be satisfied during the quarter following the completion of AE/ESL requirements. If the AE/ESL requirements are completed during the first quarter of enrollment, the UC Entry Level Writing requirement must be satisfied before the beginning of the fourth quarter of enrollment.

AE/ESL courses, offered by the School of Humanities and listed in the School's section of this *Catalogue*, include classes in writing, speaking and listening, and reading and vocabulary development.

CREDIT FOR AE/ESL COURSE WORK

Students whose first language is not English may receive up to 12 baccalaureate credits for AE/ESL course work. Students may receive workload credit for courses taken beyond this 12-unit limit but will not receive additional credits applicable to the bachelor's degree.

CREDIT FOR NATIVE LANGUAGE

Students whose first language is not English may receive credit for course work in their native language and literature, provided such courses were completed at the college level in the country of the vernacular, or at the upper-division or graduate level at UCI or another accredited English-speaking institution. Some restrictions apply; see the School of Humanities section for information.

Advanced Placement and International Baccalaureate Credit

Advanced Placement (AP). Students who earn scores of 3, 4, or 5 on the College Board AP examinations will receive credit toward graduation at UCI. The unit and subject credit allowed toward degree requirements assigned to each test are shown in the accompanying chart.

International Baccalaureate (IB). Students completing the IB diploma with a score of 30 or above will receive 30 quarter units (20 semester units) total toward their UC undergraduate degree. The University grants 8 quarter units (5 1/3 semester units) credit for certified IB Higher Level examinations on which a student



scores 5, 6, or 7. The University does not grant credit for Standard Level examinations. Some higher-level examinations may be used to fulfill course requirements in lower-division major or general education requirements. For detailed information see the UCI Office of Admissions and Relations with Schools' Web site at http://www.admissions.uci.edu/youre_admitted/ib_chart.html.

The units granted for IB examinations are not counted toward the maximum number of credits required for formal declaration of an undergraduate major or the maximum number of units a student may accumulate prior to graduation from the University. Students who enter the University with IB credit do not have to declare a major earlier than other students nor are they required to graduate earlier.

Duplicate Credit. Students should be aware that AP examinations, IB examinations, and college courses taken prior to or after enrolling at the University may be duplicative. In these cases, the University will award credit for only one of these. Students cannot earn units or grade points at UCI in courses from which they have been exempted on the basis of AP or IB credit. Students who elect to enroll in courses for which they have already received AP or IB credit will have those courses specially coded on their transcript without unit or grade credit. However, some examinations exempt the student from a greater number of UCI units than the number of AP or IB units earned. In such cases, the student may elect to take the final course in the series for credit.

Application Procedures

The University prefers that students applying for admission use the online application which helps students file a more accurate and complete application by using error messages to highlight common mistakes and missing information before submission of the application. Additionally, privacy guards help ensure information stays secure. Apply online at http://www.universityofcalifornia.edu/apply.

Applications must be postmarked by the last day of the filing period. A nonrefundable application fee of $60 ($70 for international students) must accompany the application. This basic fee entitles the applicant to be considered at one campus; for *each* additional campus selected, an additional $60 fee is required.

Applicants concerned with admission or application procedure questions *specific to UCI* should communicate directly with the Office of Admissions and Relations with Schools, University of California, Irvine, CA 92697-1075; http://www.admissions.uci.edu/. Office hours are 8 a.m. to 5 p.m., Monday through Friday; (949) 824-6703.

WHEN TO APPLY FOR ADMISSION

To ensure that applications will be considered for admission by both UCI (or other UC campuses) and the student's choice of major or program of study, the completed application and the application fee should be submitted during the priority filing period, November 1–30, 2010, for fall quarter 2011. Each campus accepts for consideration all applications it receives during this period. Additionally, students required to fulfill the examination requirements for freshman admission should make arrangements to take the standardized tests early. Completing the examination requirement (SAT Reasoning Test or ACT Assessment plus Writing Test and two SAT Subject Tests) no later than the December testing date of the senior year of high school is required for students applying for the fall quarter.

After the priority filing period has ended, campuses will accept applications only if they still have openings for new students. Most campuses are unable to accept applications after the formal filing period closes.

UC Irvine no longer accepts applications for the winter and spring terms.

TRANSCRIPTS

The UCI Office of Admissions and Relations with Schools (OARS) requires complete, accurate, and up-to-date information about a student's academic program and work in progress in order to process and respond to the application in a timely manner. The transcript and other documents submitted as part of the application become the property of the University; they cannot be returned or forwarded in any form to another college or university.

Freshman Applicants. *Applicants will be notified if a preliminary high school transcript is required.* Applicants are also responsible for asking testing agencies to report examination scores for either the SAT Reasoning Test or ACT Plus Writing Test and two SAT Subject Tests to OARS. Once students are admitted and decide to enroll at UCI, *an official final high school transcript showing an official graduation date must be forwarded to OARS even if a student attends summer session.* Official final transcripts should arrive in OARS by July 15 for those students admitted for fall quarter. A California Certificate of Proficiency, the results from a proficiency test from any state, or a General Educational Development (GED) Certificate can be accepted in place of a high school diploma. Delays in receiving official transcripts will disadvantage students in the academic advising process and can affect enrollment in appropriate courses.

Transfer Applicants. *Transfer students should not send transcripts unless requested to do so.* It is essential that applicants accurately complete the self-reported college credit information in the application because it will be used for initial admission screening. *Once students are admitted and decide to enroll at UCI, an official transcript from each college attended and the high school from which they graduated must be sent to OARS even if a student attends summer session.* Final official transcripts should arrive in OARS by July 15 for those students admitted for the fall quarter. Summer-session transcripts must be submitted by September 15. Delays in receiving official transcripts will disadvantage students in the academic advising process and can affect enrollment in appropriate courses.

EXAMINATION ARRANGEMENTS

Students should make arrangements to take the SAT Reasoning Test and SAT Subject Tests with the College Board at http://www.collegeboard.com. For the ACT Assessment Plus Writing, students should contact the American College Testing Program at http://www.act.org. (Test fees should be paid to the testing services, not to the University.) At the same time the test is taken, students should request that their scores be reported to the UCI Office of Admissions and Relations with Schools. To prevent confusion or unnecessary delay, it is important to use precisely the same form of the student's name on both the application for admission and the test materials.

In 2010–11 the SAT Reasoning Test and SAT Subject Tests are tentatively scheduled to be offered concurrently on the following dates: October 9, 10, 2010; November 6, 7, 2010; December 4, 5, 2010; January 22, 23, 2011; March 12, 13, 2011 (SAT only); May 7, 8, 2011; and June 4, 5, 2011.

In 2010–11 the ACT Assessment Plus Writing Test is scheduled to be offered on the following dates: September 11, 2010 (this test date is not available in the U.S. territories, Puerto Rico, or Canada); October 23, 2010; December 11, 2010; February 12, 2011 (no test centers are scheduled in New York for this date); April 9, 2011; and June 11, 2011.

Detailed information, including confirmation of test dates, is available from the College Board, the American College Testing Program, and from most high school counseling offices.

NOTIFICATION OF ADMISSION

Most fall quarter freshmen applicants are notified of their status between March 1 and 31. Transfer applicants are usually notified by May 1. In some cases for transfer applicants, complete transcripts of course work and/or a mid-term progress report are required before a final decision can be made; such records will be requested by OARS. Note that these target dates apply only to those applicants who submitted their applications during the fall priority filing period (November 1–30). Those students who apply after the priority period will be notified as soon as possible after March 31.

Statement of Intent to Register

Students who wish to attend UCI must return a Statement of Intent to Register (SIR). The SIR serves to notify UCI of the student's decision to accept or not accept its offer of admission. Before completing and returning their SIR, students who have applied to more than one campus are advised to take as much time as is appropriate in considering their response to each campus. However, it is essential that students allow enough time to meet the stipulated deadline. Once they have decided which UC campus to attend, students should submit their positive SIR and nonrefundable $100 deposit (if applicable) either electronically or by mail. (This deposit, known as the Undergraduate Acceptance of Admission Fee, is applied to the Registration Fee when the student registers.)

Students must submit their SIR by the following deadline:

Freshmen entering fall 2011: May 1, 2011

Transfers entering fall 2011: June 1, 2011

Electronic Filing: Students are encouraged to return their SIR electronically by accessing the Office of Admissions and Relations with Schools Web site at http://www.admissions.uci.edu/ and link to "MyAdmissionsApplication@UCI." Students submitting an SIR electronically are required to pay their $100 Acceptance of Admission Fee by credit card. Fee waivers are also available online.



Filing by Mail: Students who are unable to submit their SIR online may download and print an SIR from the OARS Web site. Students must return the printed SIR along with the $100 Acceptance of Admission Fee (if requested), made payable to UC Regents, to the Office of Admissions and Relations with Schools, 260 Aldrich Hall, University of California, Irvine, CA 92697-1075. Students who are not able to either submit their SIR electronically or download an SIR from the OARS Web site should contact OARS at the address listed above and/or call (949) 824-6703.

Admission to UCI is not an assurance of receiving financial aid nor does it guarantee assignment to University housing. Separate applications are required of applicants desiring financial aid and/or University housing, and receipt of communications from the Office of Financial Aid and Scholarships, the Housing Office, or any office other than the OARS does not imply that eligibility for admission has been established.

Student Records Access and Disclosure

At UCI, an "applicant" becomes a "student" at the time of submission of the SIR. Information regarding access to student records and disclosure of student record information (both public and confidential) may be found in the Appendix.

INFORMATION FOR ADMITTED STUDENTS

ORIENTATION

Each May information about UCI's orientation programs, sponsored by the Office of the Dean of Students, is made available to admitted students who plan to enroll in the fall.

Summer Programs—Student Parent Orientation Program (SPOP). Freshmen are required to attend an orientation program (except for Summer Bridge and CAMP participants). SPOP provides the opportunity for freshmen and their parents to attend a comprehensive orientation program. Each program includes academic advising, program planning, and registration for fall classes. In addition, information on housing, financial aid, campus resources, student life, and more is included.

Transfer Success is a unique one-day program geared to the needs of transfer students. Held in early summer, the program provides information on campus resources, student life, and tours.

For more information about all of the orientation programs, visit http://www.dos.uci.edu/orientation; telephone (949) 824-5182; or send e-mail to orientation@uci.edu.

Welcome Week is held each fall a few days prior to the beginning of classes. A variety of academic and social activities for new and returning students are held during this time. For more information, visit http://www.dos.uci.edu/welcomeweek.

DIVISION OF UNDERGRADUATE EDUCATION

The core mission of the Division of Undergraduate Education is to provide campus leadership, programs, and services which enhance the quality of undergraduate education at UCI. An advocate and steward for educational excellence, the Division works with all academic units, programs, and members of the UCI community to foster a climate of learning, discovery, and engagement for every undergraduate student. Through its diverse and innovative programs and services, the Division provides support for student academic achievement, for a rich and coherent curriculum, and for outstanding teaching through the integration of teaching and research activities and the facilitation of effective pedagogy.

The Division of Undergraduate Education is responsible for the following programs and services: Assessment and Research Studies; the Campuswide Honors Program, which also administers the Scholarship Opportunities Program; the Center for International Education, which includes the Education Abroad Program and the International Opportunities Program; the Peer Academic Advising Program and academic advising for Undecided/Undeclared and Pharmaceutical Sciences undergraduate students; the First-Year Integrated Program; the Undergraduate Research Opportunities Program; the Learning and Academic Resource Center; Student Support Services; the Academic Testing Center; the Teaching, Learning & Technology Center; Transfer Student Services; classroom technology support; administration of the UCDC Academic Internship Program and the UC Sacramento Scholar Intern Program; and the organization of the campus's student orientation programs in cooperation with the Division of Student Affairs. The Division is also responsible for the Freshman and Transfer Seminar Program where students are introduced to the research university and encouraged to become active participants in intellectual interactions with their peers and professors. The Division's programs and services are described in detail below.

The Division is responsible for the administration of the Academic Honesty Policy (approved by the UCI Academic Senate; see the Appendix) as it relates to undergraduates, and for implementing the Student Recommended Faculty Program, initiated at UCI in 1969. This is the only such program in the U.S. that affords undergraduates the opportunity to identify, select, and propose recruitment of nonrenewable faculty appointments in curricular areas of particular interest not represented at UCI. Call (949) 824-1955 for information.

Assessment and Research Studies

The Office of Assessment and Research Studies supports excellence in undergraduate education through assessment of student learning outcomes and a comprehensive program of research and evaluation studies related to the undergraduate experience and curriculum. The Office coordinates the campus approach to educational assessment and provides data and information on undergraduate students, programs, and policies for use in decision-making by the Dean of the Division of Undergraduate Education and other campus leaders. It also provides consultation and technical advice for faculty and staff on assessment of student learning, program evaluation, survey research, statistical analyses of student data, and development of new undergraduate majors and minors with a view to enhance undergraduate education at UCI. For further information visit http://www.assessment.uci.edu/assess.

Academic Advising

At the time of admission to UCI every undergraduate student is assigned to the school that offers the student's selected major. Students who have indicated "Undecided/Undeclared" as a major on their UC application for admission and scholarships receive assistance from the Undecided/Undeclared Advising Program until they select an academic major.

Jurisdiction over all questions of academic regulations and academic standing rests with the dean of the school to which a student is assigned or, in the case of undecided/undeclared majors, with the Dean of the Division of Undergraduate Education. Each academic unit provides academic advising for its students and processes requests to add or drop courses, waive or change graduation or other requirements, or change majors. Students are responsible for knowing the governing regulations of the school or program to which they are assigned.

While each academic unit is responsible for maintaining a system which provides academic advising, these systems differ from unit to unit. In some, all of the faculty serve as advisors; in others, only certain members of the faculty are designated as advisors. All advising offices include academic counselors, professionals who assist students in planning their program, selecting a major, and making progress toward a degree. Peer academic advisors (trained upper-division students) assist students in many of the same areas as academic counselors. In addition, they are able to answer questions relating to student life issues, providing a student perspective. Responsibility for informing students of the names of their advisors rests with the dean of the appropriate academic unit. This is done normally by letter; however, students may obtain information by telephone from the office of the appropriate dean. Telephone numbers for academic advising offices are listed in the academic unit sections of the *Catalogue.*

New students are encouraged to plan their academic programs with an academic counselor shortly after being admitted. The optimum time to initiate contact with an academic counselor is before the student enrolls in classes. The academic counselor can help the student determine whether the classes the student wishes to take are appropriate to the student's level of preparation, whether the proposed classes fit within the student's educational goals, and whether the classes will help meet some of the requirements for graduation.

In some schools, consultation between students and their faculty advisors is mandatory. Regardless of whether or not consultation between student and advisor is required, students are responsible for initiating and maintaining periodic contact with their assigned faculty advisor. The actual frequency of these meetings will be determined by the desires of the student, the advisor, and the unit's governing regulations.

Each quarter, new students are required to go to the appropriate academic dean's office prior to registration for advice concerning class enrollment.

Finish-in-Four Advising

Many UCI entering freshmen graduate in four years, with appropriate planning. Students who wish to be assured of earning their degree in a timely manner should contact the academic counseling office for their major to receive information about Finish-in-Four Advising and assistance in developing a detailed curricular plan.

Undecided/Undeclared Students

Students who enter the University as freshmen or sophomores may be uncertain about which major they should choose and may not feel ready to declare their major or even to identify their interests with a particular school. Such students participate in the Undecided/Undeclared Advising Program which is administered by the Division of Undergraduate Education. This program is located in 256 Aldrich Hall; telephone (949) 824-6987. The goal of the Undecided/Undeclared Advising Program is to help students make the best informed and most rational choice of a major that is possible. All students at UCI are required to choose their major by the time they reach junior status.

To make a good decision about which major to declare, students should know the range of programs UCI offers and have some experience with them, have a good knowledge of their own abilities and interests, have clear educational goals, and have a sense of their vocational goals and of the academic programs at UCI that will provide appropriate preparation. Students in the Undecided/Undeclared Advising Program meet with faculty and receive quarterly individualized staff counseling that helps them explore the variety of course offerings on campus, become more aware of their own interests and abilities, formulate sound educational goals, and learn how to prepare for graduate education and/or possible careers.

To assist students in choosing a major, the program offers a course designed to expose undecided/undeclared students to a variety of opportunities and resources available to them and to introduce students to each of the schools and majors offered. In addition, students learn about research and career opportunities within different disciplines.

The Division of Undergraduate Education's Undecided/Undeclared Advising Program is coordinating the undergraduate affairs activities and providing student advising for the Department of Pharmaceutical Sciences. For further information call (949) 824-6987.



Courses in University Studies

(Schedule of Classes **designation: Uni Stu)**

University Studies 2 UCI—Majors (2). A systematic exploration of UCI's undergraduate majors. Strongly recommended for Undecided/Undeclared freshmen and open to all freshmen as space permits.

University Studies 3 Mini-Seminars (1). Designed primarily for freshmen as an introduction to scholarly inquiry. Each section is taught by a faculty member from one of the academic disciplines and presents interesting and challenging topics representing the instructor's interest. Students participate in discussions, presentations, and projects. Some sections may be graded Pass/Not Pass only. May be taken for credit three times.

University Studies 4 Transfer Student Seminars (1). Designed primarily for transfer students during their first year at UCI. Each section is taught by a faculty member from one of the academic disciplines as an introduction to scholarly inquiry in their discipline. Students participate in discussions, presentations, and projects. Open to new students only; upper-division only until first week of classes. May be taken for credit two times.

University Studies 5 Freshman Seminar (2). Same description as University Studies 3.

University Studies 6 University Studies International Village Seminar (1). Seminars held in International Village that are specifically designed to either (a) introduce visiting international students to the U.S. and/or local area and institutions or (b) engage both international and U.S. students in discussion of topics of international interest.

University Studies 7 UTeach: Student-Taught Seminar (1). Student-taught seminar courses on selected topics. Topics vary each year according to the interest of the students teaching the classes. Prerequisites: University Studies 197B; consent of instructor; must be accepted into UTeach Program. Pass/Not Pass only. May be taken for credit two times.

University Studies 40 Personal Success and Global Perspective (0). Furthers students' understanding of crucial personal and global issues and develops skills necessary for success in applying for prestigious scholarships and in graduate/professional studies. Seminar course with oral presentations, discussions, and written statements receiving particular emphasis. Two units of workload credit only. Prerequisites: minimum 3.7 GPA, sophomore standing; must submit writing sample and receive consent of instructor. Pass/Not Pass only.

University Studies 50 International Opportunities Program Study Abroad (12). Approved study at a foreign institution through the International Opportunities Program. To enroll, a student must submit a completed and approved International Study Advance Contract to the Center for International Education (CIE). Contact CIE for complete information. May be taken for credit four times.

University Studies 81 University Success (0). Survey of attitudes and skills necessary for University success. Designed primarily for new students who are first generation and/or low income students. Focus on specific tools and proven methods to improve academic performance. Two units of workload credit only. Open only to students in Transfer Summer Bridge Program or Freshmen Summer Bridge Program. Pass/Not Pass only. University Studies 81 and ICS 92 may not both be taken for credit.

University Studies 82 Computer Literacy (0). Survey of computer skills and tools necessary for University success. Designed primarily for new students who are first generation and/or low income students. Focus on specific tools and resources used widely in academic programs. Two units of workload credit only. Open only to students in Transfer Summer Bridge Program or Freshmen Summer Bridge Program. Pass/Not Pass only.

University Studies 83 Pathways to University Success (2). Helps first-year students transition to UC Irvine and promotes a successful University experience. Students learn about academic resources and programs that support acclimation to the campus and enhance academic development through lectures, discussions, and a range of co-curricular activities. University Studies 83 and 84 may not both be taken for credit.

University Studies 84 Bridges to University Success (4). Helps first-year students transition to UC Irvine and promotes a successful University experience. Students learn about academic resources and programs that support acclimation to the campus and enhance academic development through lectures, writing laboratories, discussions, and a range of co-curricular activities. University Studies 84 and 83 may not both be taken for credit.

University Studies 108 Introduction to Research (4). Introduces new transfer students to research culture of the University. Students learn about the importance of research and creative activities as they are framed in a broad range of disciplines and are introduced to general research methods and approaches. Open only to students in Transfer Summer Bridge Program.

University Studies 175 Methods and Application in Small Group Instruction (4). Explores various theories and methods of learning and development and their practical application in small group settings. Peer tutors receive instruction in the design, implementation, and evaluation of an effective learning environment for undergraduate students. Prerequisite: employment as a tutor for the Learning and Academic Resource Center. Formerly University Studies 198.

University Studies 184 UC Center Sacramento Research Seminar (4). Develops an understanding of policy analysis and the policy and political process in California. Students write a research-based policy analysis on a topic related to their areas of academic interest and/or issues addressed at their internship sites in Sacramento. Corequisite: University Studies 185. Prerequisite: selected for UC Center Sacramento Program. May be taken for a total of eight units.

University Studies 185 UC Center Sacramento Internship (4 to 8). Supervised internship (24–40 hours per week) in Sacramento government, nonprofit, or private institution consistent with student's interest. Corequisite: University Studies 184. Prerequisite: selected for UC Center Sacramento Program. Pass/Not Pass only. May be taken for a total of 16 units. **(IX)**

University Studies 186 Sacramento Elective (4). Elective course offered by the UC Center Sacramento Program. Topics vary each quarter. Prerequisite: selected for UC Center Sacramento Program. May be taken for credit twice.

University Studies 190 Teaching Seminar: Theory and Practice (2). For students selected to be discussion leaders for University Studies 1 and 2. Models of teaching, developmental theory applied to college freshmen, curriculum development. Practice of teaching techniques and group management skills. May be taken for credit twice.

University Studies 192 Group Project for Discussion Leaders (4). For discussion leaders for University Studies 1 and 2. Weekly discussion group training for leading effective groups in addition to evaluations of weekly discussion sections and completion of a special project on issues of freshman development. Prerequisite: consent of instructor. **(IX)**

University Studies 194 The Washington Seminar (4). Interdisciplinary seminar examines and explores unique aspects (e.g., governmental, cultural, political, the arts, historical, media related) of Washington, D.C. Core course mandatory for all participants in Washington D.C. Center Program. Prerequisite: selected for Washington D.C. Center Program. Same as Social Science 192.

University Studies 195 Washington D.C. Center Internship (4 to 8). Supervised internship (20–40 hours per week) in Washington, D.C. government, nonprofit, or private institution consistent with student's interest. Corequisite: University Studies 194. Prerequisite: selected for Washington D.C. Center Program. May be taken for a total of 16 units. **(IX)**

University Studies 197A UTeach Special Study (2). Students accepted to teach a UTeach course in spring quarter enroll in Special or Independent Study with their faculty mentor during the preceding fall quarter to develop their detailed course syllabus. Prerequisites: consent of instructor; must be accepted into UTeach Program.

University Studies 197B UTeach: Teaching Theory and Practice (2). Students accepted to teach a UTeach course in spring quarter enroll during the winter to develop their teaching skills in preparation for teaching the following quarter. Prerequisites: University Studies 197A or approved 199 class with faculty mentor; consent of instructor; must be accepted into UTeach Program. Pass/Not Pass only.

University Studies 197C UTeach: Teaching Practicum (2). Students selected to teach in the UTeach Program teach their courses and meet weekly in a seminar to continue to develop and enhance their teaching skills. Prerequisites: University Studies 197B; consent of instructor; must be accepted into UTeach Program. Pass/Not Pass only. May be taken for credit two times.

University Studies 197D Study Abroad Experiential Learning (1). Study abroad on an approved program and complete a critical reflection (written paper, blog, etc.) which must be submitted no later than the end of the quarter following the completion of the study abroad program. Enroll while studying abroad or the quarter immediately following return. Pass/Not Pass only. **(IX)**

First-Year Integrated Program

University Studies 11–15 are three-quarter multidisciplinary sequences for freshmen only. These integrated courses are designed to introduce students to the ways different disciplines approach similar problems and to provide a freshman learning community experience. Successful completion of all three quarters will satisfy four courses toward partial fulfillment of different general education (GE) requirement categories. These courses are designed to have a capstone research writing component in the third quarter which will satisfy the second quarter of the lower-division writing requirement—one of the four courses toward partial fulfillment of GE categories. To satisfy the second quarter of the lower-division writing requirement with an FIP sequence, students must concurrently enroll in Writing 39B either the fall or winter quarter and pass it with a grade of C or better, and also complete the FIP sequence with a grade of C (or Pass) or better in the third quarter of the sequence.

NOTE: Undecided/Undecided students enrolling in an FIP sequence are not required to take University Studies 2.

University Studies 11A-B-C Persuasion and Social Change I, II, III (5-5-5) F, W, S. Introduces students to the history, theory, and practice of rhetoric: the art of persuasion. Rhetoric is the ability to create and analyze effective communication in any medium, including speech, writing, visual arts, and others. The emphasis of this course is rhetoric for direct social change. Students read historical and contemporary texts about rhetoric and read and view noteworthy examples of rhetorical practice in a variety of forms: confessions, speeches, manifestos, films, and electronic texts. Students from any discipline will become critical consumers of rhetoric, learning how to recognize the tools of persuasion in everyday life, and will use rhetoric themselves for interpretation and research. The issue of effective speech will be approached from several different disciplines of the Humanities. Prerequisites: for 11A: satisfaction of the UC Entry Level Writing requirement; for 11B: 11A and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C) or concurrent enrollment in Writing 39B; for 11C: 11B and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C). **(One course toward category I–equivalent of Writing 39C, and three courses toward category IV.)**

University Studies 12A-B-C Computer Games as Art, Culture, and Technology I, II, III (5-5-5) F, W, S. An introduction to the study of computer games as art objects, cultural artifacts, gateways to alternate realities, and complex software. Students learn vocabularies, perspectives, tools, and skills from multiple disciplines necessary to create and critique computer games. Exposure to contemporary art practices utilizing game metaphors, design principles, and technologies is emphasized. Students design and create games by programming and utilizing content creation software. Prerequisites: for 12A: satisfaction of the UC Entry Level Writing requirement; for 12B: 12A and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C) or concurrent enrollment in Writing 39B; for 12C: 12B and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C). University Studies 12A-B-C and ICS 60 may not both be taken for credit. **(One course toward category I–equivalent of Writing 39C, one course toward category III, one course toward category IV, and one course toward category V.)**

University Studies 13A-B-C Environmental Studies I, II, III (5-5-5) F, W, S. Introduces students to the Earth as a system, the physical and biological resources on the planet, and the impact of humanity on those resources. Students become aware of the unique features of Earth that allowed the origin and evolution of life, the intrinsic values as well as the resource values of species and ecosystems, the extent of damage from historical and current overexploitation, efforts to restore endangered species and ecosystems, and the difficulties of reaching a sustainable relationship with the resources available in the face of increasing human population numbers compounded by increasing economic activity. Intended to help students become more informed citizens and decision makers, and will be ideal preparation for participation in relevant majors in the natural sciences, social sciences, and humanities. Prerequisites: for 13A: satisfaction of the UC Entry Level Writing requirement; for 13B: 13A and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C) or concurrent enrollment in Writing 39B; for 13C: 13B and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C). **(One course toward category I–equivalent of Writing 39C, two courses toward category II, and one course toward category III.)**

University Studies 14A-B-C Natural, Cultural, and Social Conditions of Music I, II, III (5-5-5) F, W, S. A multidisciplinary approach to the study of the complex phenomena of music focusing on thought processes, social organization, and understanding. The disciplines involved take a variety of perspectives including: music conceptualization, sociohistorical models of music, and empirical physical models and methods used to produce, propagate, and detect music. Prerequisites: for 14A: satisfaction of the UC Entry Level Writing requirement; for 14B: 14A and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C) or concurrent enrollment in Writing 39B; for 14C: 14B and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C). **(One course toward category I–equivalent of Writing 39C, one course toward category II, one course toward category III, and one course toward category VII.)**

University Studies 15A-B-C Consciousness I, II, III (5-5-5) F, W, S. Introduces students to the theory of consciousness in the disciplines of cognitive science, philosophy, literature, psychoanalysis, and fine arts as represented in the genres of poetry, fiction, and film. Students are introduced to debates about the mind-body relationship and how it figures in discourse about the nature of consciousness. Students will become better skilled in analyzing scholarly works in the represented disciplines and genres, and in writing and revising analytic essays. Additionally, provides students with new concepts and vocabulary with which to understand their own experience of consciousness. Prerequisites: for 15A: satisfaction of the UC Entry Level Writing requirement; for 15B: 15A and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C) or concurrent enrollment in Writing 39B; for 15C: 15B and completion of Writing 39B with a minimum grade of C (or a Pass or Credit grade equivalent to C). **(One course toward category I–equivalent of Writing 39C, one course toward category III, and two courses toward category IV.)**

Placement Testing

UCI's Academic Testing Center administers placement tests to new and continuing students to ensure correct placement in selected introductory courses and to help students assess their readiness for University-level work. These tests are selected or developed by UCI faculty who also determine the grading criteria for each test.

Results from placement tests are used by students and their academic counselors to formulate a plan of study which is best suited to the students' learning needs and career goals and to determine enrollment in introductory courses. Additional information, such as entrance examination scores, Advanced Placement (AP) scores, and high school work, also may be used to determine course placement.

Placement tests are given in the areas of physics, calculus, mathematical analysis, Chinese, French, German, Japanese, Korean, Spanish, Vietnamese, and Academic English/English as a Second Language.

1. Physics Placement Test. Students who plan to enroll in an introductory physics course (Physics 2, 7A, or 7C) are required to take this test unless otherwise exempt.
2. Calculus Placement Test. Students who plan to enroll in Mathematics 2A are required to take this test unless otherwise exempt.
3. Mathematical Analysis Test. Students who plan to enroll in Mathematics 1A or 1B, or who have not had a prior course in precalculus and who plan to enroll in mathematics courses at UCI are strongly encouraged to take this test.
4. Chinese Placement Test. Students who plan to enroll in Chinese 1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, or 3C are required to take this test. The score from this test and completion of a faculty oral interview will place students in the appropriate course.
5. French Placement Test. Students who plan to enroll in French 1A, 1B, 1C, 2A, 2B, 2C, or 3A are recommended but not required to take this test unless otherwise exempt.
6. German Placement Test. Students who plan to enroll in German 1A, 1B, 1C, 2A, 2B, 2C, or the 100 series are recommended but not required to take this test unless otherwise exempt.
7. Japanese Placement Test. Students who plan to enroll in Japanese 1A, 1B, 1C, 2A, 2B, 2C, or 3A are required to take this test. The score from this test and completion of a faculty oral interview will place students in the appropriate course.
8. Korean Placement Test. Students who plan to enroll in Korean 1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, or 3C are required to take this test. The score from this test and completion of a faculty oral interview will place students in the appropriate course.
9. Spanish Placement Test. Students who plan to enroll in Spanish 1A, 1AB, 1B, 1C, 2A, 2AB, 2BZ, 2MD, 2B, 2C, 3A, or 3B must take this test.
10. Vietnamese Placement Test. Students who plan to enroll in Vietnamese 1A, 1B, or 1C are required to take this test, unless otherwise exempt, followed by an oral interview. Students who plan to enroll in 2A, 2B, or 2C are required to take this test, unless otherwise exempt, followed by an oral interview.
11. Academic English (AE) Placement Test. This test is required of students (a) whose native language is not English, (b) whose scores on the Writing section of the SAT Reasoning Test fall below a set level, (c) who have not satisfied the UC Entry Level Writing requirement, and (d) who have received a letter from the AE/ESL Program requiring them to take the AE Placement Test. Scores from the Test of English as a Foreign Language (TOEFL) and the Test of Standard Written English (TSWE) are not considered. The AE Placement Test also is required of students referred to the AE/ESL Program on the basis of their score on the UC Analytical Writing Placement Examination. See the section on Admission of International Students for additional information.

All newly admitted freshmen will be directed to information about summer orientation, placement testing, and registering for courses. Participation in summer orientation and advising is required of new freshmen. Freshmen will register for their fall quarter courses at

orientation. Students are strongly advised, therefore, to take any required placement tests *before* their orientation program. Students may consult the Academic Testing Center's Web site at http://www.testingcenter.uci.edu for further information on placement testing and summer testing dates.

The Academic Testing Center also administers other language tests for exemptions from general education categories VI and VIII, and is responsible for the campus-based administration of the UC Analytical Writing Placement Examination.

Further information on placement and language testing may be obtained by calling (949) 824-6207 or by visiting the Center's Web site at http://www.testingcenter.uci.edu/. The Center is a unit of the Division of Undergraduate Education.

UC Analytical Writing Placement Examination

Results from the UC Analytical Writing Placement Examination are used to place students in UCI writing courses. There is a nonrefundable administrative fee associated with the examination. The fee payment process and waiver information are explained in materials students receive in April from Vangent. Students who receive admission application fee waivers will automatically have this examination fee waived. Refer to the section on Requirements for a Bachelor's Degree for complete information on the UC Analytical Writing Placement Examination and the UC Entry Level Writing requirement.

Learning and Academic Resource Center

The Learning and Academic Resource Center (LARC) is a campuswide academic support unit that provides programs designed to help students acquire the skills needed to develop intellectually, become successful learners, and achieve their academic and professional goals.

LARC staff and programs provide students with personal contact and support necessary for academic success on a large and diverse campus where students need to enroll in many large lecture courses. The Center works closely with faculty to develop programs that meet both curricular objectives and the changing needs of students. LARC programs stress the development of academic abilities that all university students need regardless of major: effective study strategies, critical reading, and analytical writing. Other programs focus on specific disciplines and offer students the opportunity to improve their academic skills in such areas as biology, chemistry, mathematics, humanities, social sciences, and computer sciences, among others.

The Center offers adjunct classes, workshops, individual counseling, small peer tutoring groups, and support in all forms of academic writing. Students may enroll in LARC programs by calling (949) 824-6451 to make appointments. Additional information including schedules for adjunct classes, workshops, and tutorials may be obtained online at http://www.larc.uci.edu/.

Student Support Services

Student Support Services (SSS) provides individual counseling and academic support for students who are first-generation college students or low-income students, as well as disabled students (those with physical and/or learning disabilities). SSS sponsors several major projects and a variety of workshops.

A primary responsibility of SSS is to monitor the academic progress of its students. To best assist students who are having difficulty with their course work, professional counselors maintain a close liaison with academic departments. When needed, referrals to other campus support services are provided. In conjunction with these academic and service units, a variety of workshops are offered throughout the year by SSS. A second mission of SSS at UC Irvine is to provide the resources necessary so that all students served may achieve their full academic potential. Many of the workshops offered during the year serve this goal as does a graduate school preparatory course for those students whose career interests require graduate study.

SSS also sponsors and conducts the Summer Bridge at UCI for eligible students who demonstrate the potential to succeed at the University and desire the early start that may help them to achieve their full academic potential. Summer Bridge is designed to provide and refine basic academic skills necessary for students to successfully complete their course work during the regular school year and to help students make a successful transition to the University.

Students are encouraged to make appointments with Student Support Services; telephone (949) 824-6234. Additional information is available online at http://www.due.uci.edu/sss.

Transfer Student Services

The primary role of the Transfer Student Services (TSS) program is to help transfer students quickly locate appropriate sources of advice and other services relevant to their educational and student life needs. Within TSS the Transfer Student Center and Lounge provides a comprehensive resource center for new and continuing transfer students. Transfer students have a "home away from home" at UC Irvine where they can take advantage of the assistance provided by the Transfer Services counselors and the transfer student mentors within the Keys to Transfer Success mentor program. The Transfer Student Center and Lounge is also the headquarters for the Tau Sigma National Honor Society for transfer students and the Transfer Student Organization (TSO).

For more information, contact TSS, 2200 Student Services II, telephone (949) 824-1142; email: transfer@uci.edu; World Wide Web: http://www.transfercounseling.uci.edu.

Honors Opportunities

UCI offers many challenging and enriching honors opportunities to its most accomplished and motivated students. These include a comprehensive Campuswide Honors Program, which enrolls outstanding students of all majors from the freshman through senior years; a variety of major-specific honors programs at the upper-division level; the Humanities Honors Program, also offered at the upper-division level, but open to all majors on campus; and several Excellence in Research programs.

These programs offer some of the advantages usually associated with selective liberal arts colleges: rigorous, small, personalized classes and the intellectual exchange that creates a community of scholars. The difference, however, is that UCI's programs have the support and benefit of the resources of a major research university, including renowned faculty, research opportunities, and the 34-million-volume University of California Library system (of which UCI Library collections number some 3.2 million volumes).

Honors students are also encouraged to participate in the UC Education Abroad Program, the International Opportunities Program, or the UCDC Internship Programs during their junior or senior year. Qualified students are also encouraged to take advantage of resources available in the Scholarship Opportunities Program (SOP) and the Undergraduate Research Opportunities Program (UROP). These programs are described in other sections of this *Catalogue*.

Campuswide Honors Program

Founded in 1988, the Campuswide Honors Program (CHP) is available to selected high-achieving students in all academic majors from their freshman through senior years. It maintains an active roster of approximately 650 students. Many CHP students have continued their studies after graduation from UCI at the most prestigious graduate and professional schools in the country.

The CHP provides talented and successful UCI students with a special honors curriculum consisting of small, seminar-style classes, close interaction with peers, mentorship by UCI's top faculty, and the opportunity to participate in undergraduate research. Enhanced advising support provides students with assistance in planning a path to success, including course selection, preparing for graduate and professional schools, prestigious scholarships, and study abroad. Completion of the Campuswide Honors Program is noted on the student's transcript and baccalaureate diploma.

Admission. Admission to the program as an incoming UCI freshman is by invitation only; all eligible candidates are reviewed and selected by faculty representatives from each academic unit. Transfer and other students are eligible to apply for admission to the CHP up until the end of the first quarter of their junior year, if they have a minimum grade point average of 3.5. Qualified transfer students may also apply prior to matriculation. The CHP seeks to admit students who have a demonstrated passion for learning, a willingness to explore and take risks, and an interest in pursuing academic excellence in a range of disciplines outside of their major area.

Curriculum. CHP students pursue three, year-long interdisciplinary Honors core courses (one course per quarter), satisfying various categories of the general education requirement. Many of these courses provide an interdisciplinary approach to major subjects and issues. Faculty from a variety of disciplines are chosen especially for their teaching ability and scholarship. Participants pursue original research under the direct supervision of faculty members, culminating in the production of an honors thesis, creative project, or publication-quality paper. Many CHP students also participate in major-specific honors programs. The senior honors thesis that is developed and produced through these programs satisfies the CHP research and thesis requirement. Transfer students who join the CHP, and who have successfully completed an honors program in community college with a cumulative GPA of 3.5 or better, are not required to take an Honors core course, but must complete research and the senior honors thesis or creative project.

Freshmen CHP students begin their course of study by taking honors sections of the Humanities Core Course (Humanities H1A-B-C). Team-taught by professors from various disciplines in the School of Humanities, the Humanities Core Course is organized around major themes. Faculty from a wide range of disciplines exemplify the ways in which humanists approach issues from philosophical, historical, and cultural perspectives. In small discussion sections, students put those perspectives into practice in their own writing and in classroom conversations and debates designed to engage each student intellectually.

The Critical Issues in the Social Sciences sequence (Social Sciences H1E-F-G or Social Ecology H20A-B-C), usually taken in the sophomore year, is team-taught by professors from the Schools of Social Sciences and Social Ecology. Topics have included human vision; authority (dis)obedience, and human society; decisions and compromises and their rewards and penalties; human language and its disablement; and exotic societies (including our own).

The Idiom and Practice of Science interdisciplinary sequence (Chemistry H90, Earth System Science H90, Physics H90, or Biological Sciences H90) explores the role science plays in addressing socially significant problems. Students develop the ability to understand scientific models and to judge the content, merit, and limitations of many issues of science in the modern world. The development of analytical and writing skills is emphasized. Topics have included earthquakes, chemistry in the environment, radiation/radioactivity, evolution/aging, the mathematics of power, biodiversity/conservation, genetic plant engineering, the physics of music, and calculus.

CHP students are eligible to participate in other lower-division Honors courses on the campus, along with other qualified students. These include the following courses:

Honors General Chemistry covers the same material as Chemistry 1A-B-C, but in greater depth. Honors General Chemistry Laboratory is also offered. The small class size enhances access to outstanding faculty and peers.

Honors Organic Chemistry, designed for Chemistry and Biology majors and anyone else interested in a research career, offers a smaller class size and the opportunity for interactions and experiences not possible in the larger Chemistry 51 series. It is usually taken in the sophomore year, after completion of the General Chemistry lecture and laboratory sequence.

Honors Calculus, especially recommended for prospective Mathematics majors and others with a particular interest in mathematics, covers the same material as Mathematics 2D-E, but with greater emphasis on the theoretical structure of the subject matter.

The Honors Introduction to Computer Science sequence (ICS H21, H22, H23) is open to CHP students majoring in Information and Computer Science and other students by consent of the Bren School of ICS. The first course introduces basic concepts, fundamental laws and principles of software design and construction, and introduces topics in computer organization and the social impact of technology. The second course covers in-depth concepts of programming and mathematical tools for analyzing programs. The third builds on this background with respect to mathematical tools and analysis.

Extracurricular Activities. CHP students are invited to participate in many social and cultural activities, including weekly special programs and socials, beach bonfires, poetry readings, faculty lectures, movie nights, trips to museums, concerts and plays, and an annual camping retreat. Honors students also produce a quarterly creative works journal. Continuing Honors students may volunteer for the Peer Mentor Program, providing assistance to incoming Honors students.

On-Campus Housing. CHP students are guaranteed on-campus housing, as long as they meet the Housing procedures and deadlines and remain in good standing with the Honors program. Freshmen may choose to live in Middle Earth in "The Shire," or in Mesa Court in "Loma." Sophomores and upper-division students who wish to live in Honors housing may also select one of the Honors houses in Arroyo Vista. Other non-honors housing is available in the International Village, Greek, or other theme houses in Arroyo Vista, and in apartment-style living in Campus Village or Vista del Campo. Honors housing offers a valuable living/learning experience with other Honors students and the community spirit that is a special feature of the CHP. Students bring to the living experience their vitality, creativity, and dynamic dedication to learning. Activities have included get-togethers with Honors faculty, staff, and students; international potlucks; off-campus retreats; study breaks; and other events such as workshops and special speakers geared toward the interests of the residents.

Other benefits include extended library borrowing privileges, honors study rooms in the Langson and Science Libraries, leadership and service opportunities, honors academic advising services with faculty, honors advisors and peer counselors, and close interaction with faculty and peers.

Additional information is available from the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

Major-Specific and School Honors Programs

Honors programs for qualified junior- and senior-level students also are available to Drama, Music, Music Theatre, and Studio Art majors in the Claire Trevor School of the Arts; to all majors in the School of Biological Sciences; to students from all schools regardless of their majors, through the School of Humanities; to Asian American Studies majors in the School of Humanities; to all majors in the School of Physical Sciences; to all majors in the School of Social Sciences; to all majors in the Donald Bren School of Information and Computer Sciences; and to all majors in the School of Social Ecology. The focal point of each of these programs is the development of analytical and research skills through the pursuit of research under faculty supervision. An honors-level thesis/creative project is required by most of the programs. CHP students are encouraged to participate in these programs as well as the Campuswide Honors Program. The honors-level thesis/creative project that is developed and produced through these programs also satisfies the CHP research and thesis requirement. Additional information is available in the specific academic unit sections of this *Catalogue.*

Excellence in Research Programs

The School of Biological Sciences and the Departments of Cognitive Sciences and of Psychology and Social Behavior offer students the opportunity to pursue research through their Excellence in Research Programs. Students work on their research projects under faculty supervision and have the opportunity to present their results to peers and faculty and, in certain instances, to have their research papers published. Additional information is available in the specific academic unit sections of this *Catalogue.*

Honors Recognition

Students who graduate during the academic year with academic honors, and those who receive special school awards, are honored in school-based ceremonies. Some Honors societies may also hold special ceremonies for selected students. Of the graduating seniors, no more than 12 percent will receive academic honors: approximately 1 percent *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude.* The criteria used in selecting candidates for these honors are available at the counseling office of each school. One general criterion is that students must have completed at least 72 quarter units in residence at a University of California campus. The student's cumulative record at the end of the final quarter is the basis for consideration for awarding Latin Honors. Students who have on file recorded acts of academic dishonesty, as defined in *University of California Policies Applying to Campus Activities, Organizations, and Students,* may be excluded by the Associate Deans from consideration for academic honors at graduation. For further information contact the academic counseling office of each school.

Phi Beta Kappa

Phi Beta Kappa founded in 1776, is the oldest and most respected undergraduate honors organization in the United States. It supports and recognizes academic excellence and scholarly achievement in the liberal arts and sciences, and promotes the principles of freedom of inquiry and liberty of thought and expression. UC Irvine's Phi Beta Kappa Chapter (Mu of California) was founded in 1974. Phi Beta Kappa is UCI's most selective honorary society, with only 5 percent of graduating seniors and 1 percent of juniors invited to become members each year. An annual initiation ceremony for new members is held in June. For additional information, including selection criteria, visit http://www.phibetakappa.uci.edu/.

Scholarship Opportunities Program

UCI encourages high-achieving students to learn how they can compete successfully for the most prestigious scholarships, grants, and graduate fellowships available, and to begin learning about the process as early as possible. The Scholarship Opportunities Program (SOP) organizes and disseminates information about these awards. It also facilitates the campus's application evaluation and endorsement processes for awards that require university nomination of candidates, provides individual and group counseling, presents workshops, assists students with curriculum vitae, and provides guidance on Statements of Purpose and research/project proposals.

Winner Tips. SOP staff help connect students with past UCI scholarship winners, who can share their experiences about the process and insider tips on becoming a successful candidate.

Comprehensive Workshops. SOP's two-day annual Merit Scholarships seminars present practical information and tips on applying for prestigious scholarships as well as firsthand experience from past UCI student winners and faculty. Additionally, the staff presents workshops in response to requests from academic units, clubs, and other campus groups.

Individual and Group Scholarship Counseling is available by appointment.

Resource Materials. The SOP office maintains a library of past scholarship winners' applications; descriptions and selection process information for merit scholarships; examples of successful CVs, recommendation letters, Statements of Purpose, and research and project proposals; and books on interview preparation.

SOP Services. The names and photos of students who have been awarded the prestigious national and regional scholarships and fellowships are featured on the SOP Web site at http://www.scholars.uci.edu. Plaques bearing the names of winners are displayed in the Student Center outside the entrance to the Crystal Cove Auditorium. Additional information is available in the SOP office, 1200 Student Services II; (949) 824-5461; rharris@uci.edu or sklrship@uci.edu.

Undergraduate Research Opportunities Program

The Undergraduate Research Opportunities Program (UROP), in the Division of Undergraduate Education, encourages and facilitates research and creative activities by undergraduates. Research opportunities are available not only from every discipline, interdisciplinary program, and school, but also from many outside agencies, including national laboratories, industrial partners, and other universities. UROP offers assistance to students and faculty through all phases of the research activity: proposal writing, developing research plans, resource support, conducting the research and analyzing data, and presenting results of the research at the annual spring UCI Undergraduate Research Symposium. Calls for proposals are issued in the fall and spring quarters. Projects supported by UROP may be done at any time during the academic year and/or summer, and the research performed must meet established academic standards and emphasize interaction between the student and the faculty supervisor. In addition, all students participating in faculty-guided research activities are welcome to submit their research papers for faculty review and possible publication in the annual *UCI Undergraduate Research Journal.*

UROP also sponsors the following programs.

The **Summer Undergraduate Research Program (SURP)** provides funding for UCI undergraduates from all disciplines who are conducting summer research projects or creative activities under the guidance of UCI faculty members. The program offers students

the opportunity to become immersed in a research topic for a full-time 10-week period or the equivalent of 400 hours. SURP is open to all non-graduating UCI undergraduates who are in good academic standing and who have been involved in a faculty-mentored research project or creative activity for at least one quarter.

The **Inter-Disciplinary Summer Undergraduate Research Experience (ID-SURE)** provides funding for continuing UCI undergraduates from all disciplines who are conducting interdisciplinary summer research projects or creative activities related to health promotion and disease prevention under the guidance of UCI faculty members. Students work on their projects full-time for eight weeks.

The **Integrated Micro/Nano Summer Undergraduate Research Experience (IM-SURE)** provides an opportunity for non-graduating science and engineering juniors and seniors to become immersed in biomedical, physical, and engineering micro/nanotechnology research projects under the guidance of UCI faculty members. Students work on their projects for 10 weeks.

The **Summer Undergraduate Research Fellowship in Information Technology (SURF-IT)** provides the opportunity for non-graduating UCI juniors and seniors to become involved in information technology-related research under the guidance of UCI faculty members. Students work on their projects full-time for 10 weeks.

The **Chemistry Summer Undergraduate Research Fellowship (Chem-SURF)** provides an opportunity for non-graduating science juniors and seniors to become immersed in cutting-edge research projects in the fields of chemical biology, chemical physics, and analytical atmospheric, bioinorganic, bioorganic, computational, inorganic, materials, organic, physical, polymer, surface, and theoretical chemistry under the guidance of UCI faculty members. Students work on their projects for 10 weeks.

For more information about UROP and complete details about any of the programs it sponsors, contact UROP, 2300 Student Services II; telephone (949) 824-4189; fax (949) 824-1607; urop@uci.edu; http://www.urop.uci.edu/.

UCDC Academic Internship Program

The UCDC Academic Internship Program supervises and supports students who pursue internships, elective courses, research, and creative activities in the nation's capital. This UC systemwide program, situated in the exciting environment of Washington, D.C., is open to students in all majors. Students may enroll for fall, winter, or spring quarter. While living in Washington, D.C., students are enrolled at UCI and earn 12–16 units of credit. Financial-aid eligibility is maintained. Students who meet financial need and other eligibility criteria are also considered for a President's Washington Scholarship to help cover costs associated with participation in the program.

Students live in the Washington, D.C. Center building together with students from all of the participating UC campuses, which provides a social and intellectual community throughout the quarter. The Program also offers a unique opportunity for UCI faculty members and graduate students to teach and pursue research in the Washington, D.C. area.

Interested students with strong academic records are encouraged to apply; visit 1100 Student Services II; call (949) 824-5400; dccenter@uci.edu; http://www.dccenter.uci.edu/.

UC Center Sacramento Scholar Intern Program

The UC Center Sacramento (UCCS) Scholar Intern Program supervises and supports students who pursue internships, elective courses, research, and creative activities in the state capital. This UC systemwide program is open to students in all majors, and is currently available for the fall, winter, spring, or summer terms. While living in Sacramento, students are enrolled at UCI and earn 12–16 units of credit. Financial aid eligibility is maintained. Internship opportunities are available for students in many different settings including the offices of Assembly Members, Senators, and the Governor, as well as with State agencies, nonprofit organizations, and lobbying organizations.

Interested students with strong academic records are encouraged to apply; visit 1100 Student Services II; telephone (949) 824-5400; dccenter@uci.edu; http://uccs.universityofcalifornia.edu/.

Teaching, Learning & Technology Center

The Teaching, Learning & Technology Center (TLTC), a unit of the Division of Undergraduate Education, provides instructional support through a variety of services and programs to the UCI teaching community. This support includes teaching development, skills training, and instructional technology assistance.

Teaching development includes consultation with teaching professionals regarding instructional strategies, methods, and learning theory. Faculty members and Teaching Assistants (TAs) may request consultations, and *all services are free and confidential.* Consultation can be further enhanced by videotaping the teacher in the classroom. Additionally, instructors can access a midterm feedback form through the Electronic Educational Environment's "Instructors' Toolbox" (http://www.eee.uci.edu/) in order to obtain feedback from students before the end of the term. To schedule an appointment for a consultation or other service, call TLTC at (949) 824-1150.

Other programs and services include the Pedagogical Fellows Program; a multi-day TA Professional Development Program during Welcome Week; quarterly Teaching Colloquia; workshops specifically for new faculty, experienced faculty, and graduate students; and workshops and individual assistance with the compilation of Teaching Portfolios. The TLTC also co-hosts the annual "Celebration of Teaching" which honors teaching excellence.

The TLTC provides services related to computerized presentation technology, video-conferencing, distance learning, and video and multimedia production. The Center hosts a video teleconference center for distance learning and a media center where instructors can produce multimedia resources for their courses. Technicians and instructional specialists are available to advise instructors. Additionally, the TLTC has an experimental training room called the Learning Studio (Anteater Instruction and Research Building, room 1030) that is equipped with both Mac and PC computers, four screens that display four different images, as well as Wacom Boards. To book the rooms for courses and/or events that require additional media, call (949) 824-1150.

The Center is located in the Anteater Instruction and Research Building on the corner of East Peltason and Anteater Drives, third floor, room 3000. Hours are from 8 a.m. to 5 p.m., Monday through Friday. Staff is available after hours and on weekends by special appointment. For general information, call (949) 824-1150 or visit http://www.tltc.uci.edu/.

TLTC offers the following courses:

University Studies 390A-B-C Advanced Pedagogy and Academic Job Preparation (variable units). Service learning course for graduate students who serve as teaching mentors for other TAs. Satisfactory/Unsatisfactory only. Prerequisite: must have a concurrent appointment as a Pedagogical Fellow with TLTC.

390A (2 to 4). Introduction to principles of good course design and instructional development. Students design and implement an integrated curriculum in the context of the fall TA Professional Development Program.

390B (2 to 4). Introduction to the Scholarship of Teaching and Learning literature within the students' respective disciplines. Students select or create several teaching methods stated or implied by the literature and translate these findings into workshops for other TAs.

390C (2 to 4). Prepares students for their future roles as faculty members and the academic job search. Covers job search skills; creation of *CV*, cover letters, statement of teaching philosophy; job interview and negotiation skills; types of higher educational institutions and professorial responsibilities.

Classroom Technology Support

The Classroom Technology Support unit supports excellence in undergraduate teaching and learning by providing instructional equipment and related services for faculty teaching in the General Assignment Classrooms. For information, call (949) 824-5128; http://www.classrooms.uci.edu.

Center for International Education

The Center for International Education (CIE) includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP). CIE is a comprehensive resource and counseling center which helps students take advantage of the many worldwide opportunities that exist for study, work, internship, volunteering, research, and non-credentialed teaching which relates to their degree programs at UCI.

Studying abroad is an important resource for achieving the skills, knowledge, and understanding that will make today's undergraduates effective citizens and leaders in local, national, and global affairs once they depart the University. In today's political and business environment, college graduates must be informed decision-makers with a capacity to reflect on their own values while understanding the complex identities, histories, and cultures of others. Studying abroad provides students with the language skills and cultural competence necessary to meet the current demands of business, government, and educational institutions.

Professional staff and international peer advisors, who have returned from an IOP or EAP experience, are available to guide students in making appropriate choices of international programs for their educational goals. Group and individual advising is available every day that UCI is in session. All EAP and IOP participants are provided with pre-departure and reentry orientations.

CIE, EAP, and IOP are located in 1100 Student Services II; (949) 824-6343; cie@uci.edu; http://www.cie.uci.edu/.

EDUCATION ABROAD PROGRAM

The Education Abroad Program (EAP) of the University of California offers students the opportunity to experience a different culture while making progress toward degree objectives. EAP is an overseas study program which operates in cooperation with about 150 host universities and colleges in 35 countries throughout the world. Programs are available for students in every major. The wide variety of programs includes those offering general curriculum, intensive language study, and programs focusing on a specific academic subject area. Participation in EAP satisfies category VIII and can satisfy category IX of the UCI general education requirement. A summary of EAP opportunities is shown in the accompanying chart.

Students are advised to plan early in their academic career in order to best match studying abroad with their major to graduate on time. Students are encouraged to study abroad as a sophomore or junior, allowing the opportunity to incorporate their international learning into their final year at UCI. Preliminary guidance is available at the EAP Academic Planning Web site (http://www.cie.uci.edu/academics/academicplanning.html).

The cost of studying abroad through EAP is often comparable to the cost of studying at UCI. Participants pay the same education and registration fees normally paid for a similar period at UCI, plus room, board, books, round-trip transportation, on-site orientation, intensive language program expenses (when applicable), and any other personal expenses. All UC financial aid (other than work-study), including grants, scholarships, and loans, is available to EAP students who qualify. Both need-based and merit-based scholarships specifically for study abroad are also available. Information is available at http://www.cie.uci.edu/finaid.html.

On-site abroad, a UC professor, local faculty member, or administrative coordinator oversees local operations, including in-country orientation, student academic advising, and assistance with emergencies, large and small. Students interested in EAP should visit the Web site (http://eap.ucop.edu/) to review program options and visit the CIE Web site (http://www.cie.uci.edu), or come to the CIE office for advising and to obtain an application. UCI EAP deadlines are available at http://www.cie.uci.edu/DeadlinesByCountry.html.

UC EAP Summary of Opportunities

Country	*Terms of Participation*	*Language of Instruction*
Argentina	S	Spanish
Australia*	F, S, Year	English
Barbados	F, Year	English
Brazil*	F, S, Year	Portuguese, English
Canada	F, Year	English
Chile*	F, S, Year	Spanish
China	Summer, F, S, Year	Standard Chinese, English
Costa Rica*	F, S	English
Denmark	Summer, F, Year	English, Danish
Egypt	Year	English
France	Summer, F, S, Year	French, English
Germany	F, S, Year	German, English
Ghana	F, S, Year	English
Hong Kong	F, S, Year	English, Cantonese, Putonghua
Hungary	F, S, Year	English
India	F	English
Ireland	Year	English
Italy	Summer, F, S, Year	Italian, English
Japan	F, S, Year	English, Japanese
Republic of Korea	Summer, F, S, Year	English, Korean
Mexico	Summer, F, S, Year	Spanish
Netherlands	F, S, Year	English, Dutch
New Zealand*	S, Year	English
Russia	F	Russian
Singapore	F, S, Year	English
South Africa*	F, S, Year	English
Spain	Summer, F, S, Year	Spanish, Catalan
Sweden	Summer, F, Year	English, Swedish
Taiwan	F, S, Year	Standard Chinese, English
Thailand	Summer, F, S, Year	English
Turkey	F, S, Year	English
United Kingdom	Summer, F, S, Year	English
Vietnam	F	English

*The academic year begins in January or February instead of in the fall.

NOTE: Information is subject to change. Consult the Web site for the most current information.

INTERNATIONAL OPPORTUNITIES PROGRAM

UCI's International Opportunities Program (IOP) is the link between UCI students and any international educational experience that occurs outside the boundaries of the U.S. and is not a part of the UC Education Abroad Program (EAP) nor the UCI Summer Session Travel-Study program. Any UCI student (undergraduate, graduating senior, or graduate) in good academic standing, regardless of major, class level, or foreign language ability, may participate in IOP.

CIE staff provide information and counseling to assist students in finding an appropriate program to meet their needs and interests.

Students may choose from academic study (with transferable credit), paid work, paid or unpaid internships, unpaid or compensated volunteer service, field research, and paid teaching opportunities in nearly every country in the world. This includes all academic programs sponsored by U.S. institutions that occur on foreign soil or water (as in the case of the Semester at Sea program), direct enrollment at foreign institutions, summer session abroad programs through other UC campuses, and study abroad programs offered by private providers.

With careful planning IOP students participating in study programs can make progress toward their UCI degree by fulfilling major, minor, or general education requirements. Students may apply for transfer credit and UCI financial aid by completing the IOP Credit Contract. Many scholarships are also available.

To acquaint students with opportunities abroad, IOP sponsors the annual Go Abroad Fair and periodic informational presentations. CIE also maintains a listing of opportunities abroad on its Web site. Interested students should visit http://www.cie.uci.edu/ or come into the CIE office for assistance.

REQUIREMENTS FOR A BACHELOR'S DEGREE

There are four groups of requirements that must be met to earn a baccalaureate degree from UCI: general UC requirements, UCI requirements, school or program requirements, and degree-specific requirements. UC and UCI requirements are described below. School or program and major-specific requirements are described in full in the academic unit sections.

Students with identified learning and/or physical disabilities, including language-acquisition problems, are eligible to receive support through the Disability Services Center; telephone (949) 824-7494 (voice), 824-6272 (TTY), e-mail: dsc@uci.edu. Staff can assist students from the time they are admitted to UCI until they graduate.

Catalogue Rights

Students enrolled at UCI from their freshman year may elect to meet as graduation requirements (UC, UCI, school, and major): (a) those in effect at the time of entrance; or (b) those subsequently established after entrance.

A readmitted student who has not been enrolled at UCI for three or more consecutive quarters (excluding summer sessions) must adhere to the graduation requirements: (a) in effect for the quarter in which the student is readmitted; or (b) those subsequently established.

Students transferring from other collegiate institutions may elect to meet as graduation requirements either: (a) those in effect at the time of enrollment at UCI; (b) those subsequently established; or (c) those in effect at UCI when the student first entered a previous, accredited collegiate institution, provided that the student has been continuously enrolled in a collegiate institution and that entry was not more than four years prior to the time of enrollment at UCI.

A transfer student who has had a break of enrollment of two consecutive semesters or three consecutive quarters (excluding summer sessions) may follow the requirements in effect at UCI: (a) at the time of enrollment at UCI; (b) those subsequently established; or (c) those in effect at the time of reentry into a previous, accredited collegiate institution, provided that reentry was not more than four years prior to enrollment at UCI.

A transfer student who has been continuously enrolled in college for more than four years prior to transfer may use: (a) the requirements in effect at the time of enrollment at UCI; (b) those subsequently established; or (c) those in effect at UCI four years prior to enrollment at UCI.

All students, whether enrolled at UCI from their freshman year, readmitted, or transfer, may elect to fulfill general education requirements as specified above, independent of how they choose to meet all other graduation requirements (UC, UCI [with the exception of general education], school, and major).

Students choosing to complete a minor, whether enrolled at UCI from their freshman year, readmitted, or transfer, may elect to fulfill minor requirements as specified above, independent of how they choose to meet all other graduation requirements (UC, UCI, school, and major).

Transfer students who complete one of the following options will be considered to have met the total UCI general education requirement except the upper-division writing requirement: (a) students who transfer from a four-year institution and who have completed the general education requirements of that college, upon approval of petition; (b) students who transfer from another UC campus and provide official documentation that they have met the general education requirements of that campus; (c) students who transfer from another UC campus and are in the process of completing the general education requirements of that campus, upon approval of petition, and who subsequently complete the remaining requirements of that campus at UCI; or (d) California community college transfer students who have completed the Intersegmental General Education Transfer Curriculum. Transfer students may also elect to complete the UCI general education requirement.

University Requirements

ENGLISH (UC ENTRY LEVEL WRITING)

Every undergraduate must demonstrate upon entrance to the University a proficiency in writing. The Entry Level Writing Requirement may be satisfied *before entrance* in any of the following ways:

1. Score 3 or higher on the College Board Advanced Placement Examination in English (Language or Literature); *or*
2. Score 5 or higher on the International Baccalaureate Higher Level Examination in English (Language A only), or score 6 or higher on the IB Standard Level Examination in English (Language A only); *or*
3. Score 680 or higher on the Writing section of the SAT Reasoning Test, or score 30 or higher on the ACT Combined English/Writing test; *or*
4. Prior to enrolling in the University, complete with a grade of C or better a transferable college course in English composition worth four quarter or three semester units. (Once a student enrolls at a UC campus, courses from institutions other than UC may not be used to satisfy the Entry Level Writing Requirement.) Students who meet the University's basic requirements for minimal transfer eligibility, which include two transferable college courses in English composition, satisfy the Entry Level Writing Requirement; *or*
5. Achieve a passing score on the UC Analytical Writing Placement Examination.

Those students who have not met the requirement before entrance must satisfy the requirement before the beginning of their fourth quarter at UCI. Students who have not satisfied the requirement by that time will be ineligible to enroll for a fourth quarter.

Students enrolled in Essentials of Academic Writing (Humanities 20A-B-C-D) must enroll in Fundamentals of Composition with Computer Lab (Writing 39AP and Lab) immediately after

they are authorized to do so by the Academic English/English as a Second Language Program. Students with a score of 2, 3, or 4 from the UC Analytical Writing Placement Examination are also required to enroll in Writing 39AP with Computer Lab.

The UC Entry Level Writing requirement may be met *after admission* by one of the following options:

1. Passing the UC Analytical Writing Placement Examination given in mid-May (and on subsequent dates) to all entering freshmen admitted for fall quarter (see Placement Testing). Transfer students who have not satisfied the UC Entry Level Writing requirement should contact the UCI Composition Program Office, 420 Humanities Instructional Building; telephone (949) 824-6717.
2. Enrolling in sections of the Humanities Core Course designated "S/A." (NOTE: Students held for UC Entry Level Writing and enrolled in the Humanities Core must enroll in a S/A section of the Core Course during their first quarter. Successful completion of the writing component of these sections of this course with a letter grade of C or better will satisfy the requirement. Students who do not receive a letter grade of C or better in Humanities 1A S/A in fall quarter and who continue to be held for UC Entry Level Writing must enroll in Humanities 1B S/A during the winter quarter and satisfy the requirement by earning a letter grade of C or better.)
3. Taking Writing 37, 39A, or 39AP with Computer Lab and receiving a letter grade of C or better in that course.

The Pass/Not Pass grade option may not be used to satisfy the UC Entry Level Writing requirement.

Students enrolled at UCI may take only UCI courses in satisfaction of the UC Entry Level Writing requirement. Continuing UCI students may not take summer courses at another institution to satisfy this requirement.

AMERICAN HISTORY AND INSTITUTIONS

This requirement may be met by one of the following options:

1. Completion in an accredited high school of one year of United States history with grades of C or better, *or* one semester of United States history and one semester of United States government with grades of C or better; *or*
2. Achieving a score of 3, 4, or 5 on the College Board Advanced Placement Examination in United States History; *or*
3. Achieving a score of 550 or better on the SAT Subject Test in United States history; *or*
4. Presentation of a certificate of completion of the requirement at another California institution; *or*
5. Completion at UCI or another U.S. institution of one year of college-level United States history with grades of C or better, *or* one course in United States history and one in United States government with grades of C or better. Acceptable UCI courses: United States history—History 40A, 40B, 40C; United States government—Political Science 21A.

UCI Requirements

UNIT REQUIREMENT

Credit for a minimum of 180 quarter units, earned by examination, by other evaluation, or course work is required. A course normally offers four quarter units of credit.

GRADE REQUIREMENT

A minimum grade average of at least C (2.0) is required (1) overall, (2) in all of the courses required for the major program, and (3) in the upper-division courses required for the major program. Higher averages than this may be required only in honors programs. Students who fail to attain a C (2.0) average in courses required in the major program may, at the option of the major unit, be denied the privilege of pursuing a major program in that unit. In this context, "the courses required in the major program" are defined as the courses required for the major and offered by the program of the student's major (or programs, in the case of an interdisciplinary or interdepartmental major). A major can include additional courses required for the major in this set, with the approval of the Council on Education Policy. In this case, the list of additional courses is published in the *Catalogue* with the requirements for the major.

RESIDENCE REQUIREMENT

At least 36 of the final 45 units completed by a student for the bachelor's degree must be earned in residence at the UCI campus. Exceptions to this rule may be allowed, with prior departmental approval, to students enrolled in the Education Abroad Program, the UCDC Academic Internship Program, the UC Center Sacramento Scholar Intern Program, or the International Opportunities Program with International Study Advance Contract.

GENERAL EDUCATION REQUIREMENT

UCI is committed to the values of a liberal education. One component of that commitment is the requirement that all undergraduates complete a set of general education (GE) requirements. General education courses introduce students to a range of ideas and intellectual activities that engage UCI scholars, providing both scope and balance to a University degree beyond the study of a specific major.

The general education requirements are intended to help undergraduates place the specialized study undertaken in the major within a broader context. They are designed to cultivate the skills, knowledge, and understanding that will make students effective contributors to society and the world. The general education requirements should enable UCI undergraduates to apply the abilities developed in their studies to identify significant issues, gather and evaluate available evidence, analyze alternatives, reach conclusions, communicate the results effectively, and take considered actions.

The general education requirement is a *graduation* requirement and, with the exception of the lower-division writing requirement, need *not* be satisfied during only the lower-division years. To satisfy the general education requirement, courses are required in each of the following categories:

- **I. Writing** (two lower-division plus one upper-division course)
- **II. Science and Technology** (three courses)
- **III. Social and Behavioral Sciences** (three courses)
- **IV. Arts and Humanities** (three courses)
- **V. Quantitative, Symbolic, and Computational Reasoning** (three courses)
- **VI. Language Other Than English** (one course)
- **VII. Multicultural Studies** (one course that may also satisfy another GE requirement)
- **VIII. International/Global Issues** (one course that may also satisfy another GE requirement)
- **IX. Laboratory or Performance** (one course that may also satisfy another GE requirement)

The specific courses in each area that students may use to satisfy the requirements are listed below. When a general education course is cross-listed with another course, that course also is available for fulfillment of the requirement. Students should refer to the *Catalogue* descriptions of the courses to determine which are cross-listed.

A course qualifies for a particular GE category based on its content rather than on the academic unit that offers it. However, to increase students' exposure to a variety of disciplinary approaches, students

are encouraged to choose GE courses from a wide range of schools and departments outside of the student's major.

NOTE: The following list of courses approved for GE is effective for the 2010–11 academic year only. Because changes occur each year, students should consult the GE list annually to ensure that the courses they enroll in are on the list. GE credit is awarded for a course only if it appears on the list during the academic year when it is taken. The GE list, complete with course titles, is available at http://www.due.uci.edu/uu/. To check the GE course offerings in a particular quarter, students should consult the *Schedule of Classes* on the Registrar's Web site at http://www.reg.uci.edu.

GENERAL EDUCATION CATEGORIES

I. Writing. Because of the importance of visual; oral, electronic, and written communication in every academic discipline, in the professions, and in public life, the University is committed to developing a variety of communication abilities in students at all levels and in all areas. The Writing Requirement expresses this broad commitment, but the concern for and attention to rhetorically effective, accurate writing is expected in all courses.

The Writing Requirement consists of two courses at the lower-division level beyond the UC Entry Level Writing requirement and one upper-division course in a discipline.

Except where otherwise noted below, students must satisfy the UC Entry Level Writing requirement prior to fulfilling the UCI writing requirement.

Students who have not completed the lower-division writing requirement before the beginning of their seventh quarter at UCI will be subject to probation. Students transferring to UCI normally should have satisfied the lower-division writing requirement before entering UCI; if, however, they have not, they must complete it within their first three quarters of enrollment or they will be subject to probation. Academic English/English as a Second Language students must complete the lower-division writing requirement before the beginning of the seventh quarter following the completion of their AE/ESL courses or they will be subject to probation.

The third course must be an upper-division writing course, and it must be taken only after the successful completion of the lower-division requirement.

Students enrolled at UCI may take only UCI courses in satisfaction of the lower-division and upper-division writing requirements. Continuing UCI students may not take summer courses at another institution to satisfy lower-division or upper-division writing requirements.

After completing this GE requirement, successful students should be able to do the following:

Lower-division writing: demonstrate rhetorically effective, accurate academic writing and communication across a variety of contexts, purposes, audiences, and media using appropriate stance, genre, style, and organization; develop flexible strategies for generating, revising, editing, and proofreading texts; develop abilities in critical reading across a variety of genres and media; and demonstrate information literacy skills by locating, evaluating, and integrating information gathered from multiple sources into a research project.

Upper-division writing: demonstrate rhetorically effective, discipline-specific writing for appropriate academic, professional, and public audiences; demonstrate, at an advanced level of competence, use of discipline-specific research methods, genres, modes of development, and formal conventions; and demonstrate advanced information literacy skills by locating, evaluating, and integrating information gathered from multiple sources into discipline-specific writing.

Lower-Division Requirement: The two courses taken to fulfill the lower-division requirement must be completed with a minimum grade of C (or a Pass or Credit grade equivalent to C). Students may select from the courses specified below:

1. Writing 39B (Critical Reading and Rhetoric) and 39C (Argument and Research).
2. Writing 37 (Intensive Writing) and 39C (Argument and Research). Recommended students only.
3. Two quarters of the writing component of the Humanities Core Course (Humanities 1A-B-C) beyond satisfaction of the UC Entry Level Writing requirement. NOTE: Students held for the UC Entry Level Writing requirement and enrolled in the Humanities Core must enroll in a section of the Core Course designated S/A during their first quarter. Successful completion of the writing component of these sections of this course with a letter grade of C or better will satisfy the UC Entry Level Writing requirement. (The Pass/Not Pass grade option may not be used to satisfy it.) For these students, the UCI lower-division writing requirement may be satisfied only in the second and third quarters of the Humanities Core Course. Students who do not receive a C or better in Humanities 1A S/A in fall quarter and continue to be held for the UC Entry Level Writing requirement must enroll in Humanities 1B S/A during the winter quarter and satisfy the requirement by earning a letter grade of C or better. The lower-division writing requirement will be satisfied in the second and third quarters of the Humanities Core Course for these students.
4. Students who complete Writing 37 or 39B with a grade of B (3.0) or better may substitute as the second course of the lower-division writing requirement one of the following courses in creative writing: Writing 30 or 31.
5. Writing 39B and completion of a First-Year Integrated Program (FIP) sequence, with a grade of C (or Pass) or better in the third quarter of the sequence.

Upper-Division Requirement: The course taken to fulfill the upper-division requirement must be completed with a minimum grade of C (or a Pass or Credit grade equivalent to C). The requirement may be satisfied by completing any one of the following:

1. An upper-division course designated on a list of approved courses in the quarterly *Schedule of Classes* on the Registrar's Web site at http://www.reg.uci.edu. NOTE: All courses approved to fulfill the upper-division writing requirement should have a "W" suffix. Students are encouraged to consult the *Schedule of Classes* or their advisor to determine the current upper-division writing requirement course offerings. If a course on the approved list is offered without the "W" suffix, it does not satisfy the upper-division writing requirement.
2. Writing 139W.
3. Writing 109, 110, 111, or 113. Consent of instructor is required. Students may not use such a course to satisfy the requirement unless they have attained a B or better in both courses taken to satisfy the lower-division writing requirement.

Students who fail to attain the required grades in the courses taken in fulfillment of the writing requirement should refer to the Academic Regulations and Procedures section for further information.

II. Science and Technology. Understanding the nature of scientific inquiry and the operation of the biological, physical, and technological world is essential for making personal and public policy decisions in a technological society.

After completing this GE requirement, successful students should be able to do the following: demonstrate a broad understanding of the fundamental laws of science, the principles underlying the design and operation of technology, and the interrelations among

science and technology disciplines; demonstrate a broad understanding of various natural phenomena that surround and influence our lives; describe how scientists approach and solve problems; solve problems and draw conclusions based on scientific information and models, using critical thinking and qualitative and quantitative analysis of data and concepts; and explain the scope and limitations of scientific inquiry and the scientific method.

Students must complete three courses from the following list:

Biological Sciences 1A, 5, 6, 9A, 9B, 9C, 9D, 9E, 9G, 9J, 9K, 9N, 10, 11, 12B, 12D, 16, 20, 25, 35, 36, 37, 38, 39, 45, 55, 65, 75, H90, 93, 94
Chemistry 1A†, 1B†, C†, H2A†, H2B†, H2C†, H90
Computer Science and Engineering (CSE) 21, 22 (NOTE: CSE21, CSE22 may be counted toward either category II or V but not both.)
Earth System Science 1, 3, 5, 7, 11, 13, 15, H90
Economics 11 (NOTE: Economics 11 may be counted toward either category II or III but not both.)
Informatics 41, 42 (NOTE: Informatics 41, 42 may be counted toward either category II or V but not both.)
Information and Computer Science (ICS) 5, 8, 10, 11, 21, H21, 22, H22, 51, 61, 77A, 77B, 77C, 77D (NOTE: ICS 11 may be counted toward either category II or III but not both. ICS 21, H21, 22, H22, 77A, 77B, 77C, 77D may be counted toward either category II or V but not both.)
International Studies 16
Logic and Philosophy of Science 40
Mathematics 77A, 77B, 77C, 77D (NOTE: Mathematics 77A, 77B, 77C, 77D may be counted toward either category II or V but not both.)
Physics 3A, 3B, 3C, 7A†, 7B†, 7C†, 7D†, 7E, 14, 15, 16, 17, 18, 19, 20A, 20B, 20C, 20D, 21, H90 (NOTE: Overlap restrictions apply to Physics 7A, 7B, and 7C; see course descriptions for details.)
Public Health 30, 60, 80, 90
University Studies 13A-B-C (two courses)*, 14A-B-C (one course)*

III. Social and Behavioral Sciences. Courses will focus on principles, sources, and interpretations of human behavior and on how people organize, govern, understand, and explain social life. This category includes the analysis of human behavior at all levels, from the individual to collective social, economic, and political life, and on the scientific methods used in the acquisition of knowledge and the testing of competing theories.

After completing this GE requirement, successful students should be able to do the following: demonstrate knowledge and understanding of principles, sources, and interpretations of human behavior and how people organize, govern, understand, and explain social life; demonstrate an understanding of contemporary and historical perspectives on human behavior; understand and explain the scientific methods used in the acquisition of knowledge and the testing of competing theories in the social and behavioral sciences; and critically evaluate methods, findings, and conclusions in the research literature on human behavior.

Students must complete three courses from the following list:

African American Studies 40A, 40B, 40C (NOTE: African American Studies 40A, 40B, 40C may be counted toward either category III or IV but not both.)
Anthropology 2A, 2B, 2C, 2D, 41A
Asian American Studies 60A, 60B, 60C
Chicano/Latino Studies 61, 62, 63, 64
Criminology, Law and Society C7
Economics 1, 11, 13, 17, 20A-B, 23 (NOTE: Economics 11 may be counted toward either category II or III but not both.)
Education 55
Engineering CEE60
Environmental Analysis and Design E8
History 15C
Information and Computer Science (ICS) 3, 11, 60 (NOTE: ICS 11 may be counted toward either category II or III but not both.)
International Studies 11, 13, 14
Linguistics 3, 10, 20, 51, 68 (NOTE: Linguistics 3, 10, 20 may be counted toward either category III or V but not both.)
Philosophy 22
Planning, Policy, and Design 4
Political Science 6A, 6B, 6C, 21A, 31A, 41A, 44A, 51A, 61A, 71A
Psychology 7A, 9A, 9B, 9C, 21A, 46A, 56L, 78A
Psychology and Social Behavior 9, 11A, 11B, 11C
Religious Studies 17
Social Ecology H20A-B-C
Social Science 1A, H1E-F-G, 5A, 5C, 5D, 70B, 70C, 78A, 78B, 78C
Sociology 1, 2, 3, 23, 31, 62, 66, 78
University Studies 12A-B-C (one course)*, 13A-B-C (one course)*, 14A-B-C (one course)*, 15A-B-C (one course)*
Women's Studies 60A, 60B, 60C

IV. Arts and Humanities. Study of the Arts and Humanities expands the student's sense of diverse forms of cultural expression, past and present. Students develop their critical capacity as they discover how meaning is created and experience variously interpreted.

After completing this GE requirement, successful students should be able to do the following: demonstrate knowledge and understanding of how visual and verbal communication is used in literature and film, art and music, and philosophy and history; communicate an understanding and appreciation of diverse forms of cultural expression, past and present; understand and explain the research methods used in the acquisition of knowledge and the testing of competing theories in the arts and humanities; and think critically about how meaning is created and how experience is variously interpreted.

Students must complete three courses from the following list:

African American Studies 40A, 40B, 40C (NOTE: African American Studies 40A, 40B, 40C may be counted toward either category III or IV but not both.)
Arts 1A
Art History 40A, 40B, 40C, 42A, 42B, 42C
Classics 36A, 36B, 36C, 37A, 37B, 37C, 45A, 45B, 45C
Comparative Literature 8, 9, 10, 40A, 40B, 40C, 60A, 60B, 60C
Dance 90A-B-C
Drama 15, 40A, 40B, 40C
East Asian Languages and Literatures 55 (three different topics)
English 28A, 28B, 28C, 28D, 28E
Film and Media Studies 85A, 85B, 85C
French 50 (three different topics)
German 50 (three different topics)
History 11, 12, 15A, 18A, 21A, 21B, 21C, 36A, 36B, 36C, 37A, 37B, 37C, 40A, 40B, 40C, 50, 60, 70A, 70B, 70C, 70D, 70E, 70F
Humanities 1A-B-C, 10
Logic and Philosophy of Science 60
Music 3, 8, 9, 14A-B-C, 40B-C, 40D
Philosophy 1, 4, 5, 7, 9, 10, 11, 12, 13, 20, 21, 23
Religious Studies 5A, 5B, 5C
Russian 50 (three different topics)
Spanish 50 (three different topics)
Studio Art 1A, 1B, 1C, 9A, 9B, 9C or 11A
University Studies 11A-B-C (three courses)*, 12A-B-C (one course)*, 15A-B-C (two courses)*
Women's Studies 20, 50A, 50B, 50C

* Successful completion of all three quarters will satisfy four courses toward partial fulfillment of different GE categories. See First-Year Integrated Program on page 59 for details.

† Has a corequisite of a corresponding laboratory course, which may be used to satisfy category IX.

V. Quantitative, Symbolic, and Computational Reasoning. This requirement enables students to evaluate quantitative and symbolic arguments and to model and solve real-world problems using systems of abstract symbols.

After completing this GE requirement, successful students should be able to do the following: demonstrate competency in quantitative, symbolic, and computational reasoning; and demonstrate an ability to solve real-world problems using quantitative, logical, or computational approaches that are typical of mathematical thinking.

Students must complete three courses from the following list:

Anthropology 10A-B-C
Computer Science and Engineering (CSE) 21, 22, 23 (NOTE: CSE21, CSE22 may be counted toward either category II or V but not both.)
Informatics 41, 42, 45 (NOTE: Informatics 41, 42 may be counted toward either category II or V but not both.)
Information and Computer Science (ICS) 6, 6B, 6D, 21, H21, 22, H22, 23, H23, 77A, 77B, 77C, 77D (NOTE: ICS 21, H21, 22, H22, 77A, 77B, 77C, 77D may be counted toward either category II or V but not both.)
Linguistics 3, 10, 20 (NOTE: Linguistics 3, 10, 20 may be counted toward either category III or V but not both.)
Logic and Philosophy of Science 29, 30, 31
Management 7
Mathematics 2A, 2B, 2D, H2D, 2J, 4, 6B, 6D, 6G, 7, 67, 77A, 77B, 77C, 77D (NOTE: Mathematics 77A, 77B, 77C, 77D may be counted toward either category II or V but not both.)
Philosophy 29, 30, 31
Political Science 10A-B-C
Psychology 10A-B-C
Social Science 9A-B-C, 10A-B-C
Sociology 10A-B-C
Statistics 7, 8, 67
University Studies 12A-B-C (one course)*

* Successful completion of all three quarters will satisfy four courses toward partial fulfillment of different GE categories. See First-Year Integrated Program below for details.

VI. Language Other Than English. Study of a language other than English expands students' horizons by encouraging understanding of another culture through its language and heightens awareness of one's own language through the investigation of another linguistic system.

After completing this GE requirement, successful students should be able to do the following: demonstrate competency in reading, writing, speaking, and listening in a non-English language; demonstrate an understanding of another (non-English speaking) culture through its language; and demonstrate an understanding of one's own language through the investigation of another, non-English linguistic system.

Students must demonstrate competency in a language other than English (includes American Sign Language) by completing one of the following options:

A. College-level course work equivalent to UCI's third quarter of study in a language other than English. UCI courses approved to satisfy this requirement are:

   Arabic 1C, S1BC; Chinese 1C, S1BC; French 1C, S1BC; German 1C, S1BC; Greek 1C, S1BC; Hebrew 1C; Italian 1C, S1BC; Japanese 1C, S1BC; Korean 1C, S1BC; Latin 1C, S1BC; Persian 1C, S1BC; Portuguese 1C; Russian 1C; Spanish 1C, S1BC; Vietnamese 1C, S1BC

   For information on UCI's prerequisites, course placement policies, and the grade required to advance to the next level of instruction, consult the School of Humanities (Language Other Than English Placement and Progression) section in this Catalogue.

B. Credit for three years of high school study or its equivalent in a single language other than English with a C average or better in the third year.

C. A score of 3, 4, or 5 on a College Board Advanced Placement Examination in a language other than English. NOTE: Students who earn a 3, 4, or 5 on the AP Chinese Examination must take the UCI Chinese placement examination to determine course credit.

D. A score of 570 or better on a College Board SAT Subject Test in a language other than English, with the exception of the test in Modern Hebrew for which a score of 500 or better is required.

E. Completion of an approved course of study through the Education Abroad Program (EAP). Careful planning is required to

First-Year Integrated Program (FIP)

University Studies 11–15 are three-quarter multidisciplinary sequences for freshmen only. These integrated courses are designed to introduce students to the ways different disciplines approach similar problems and to provide a freshman learning community experience. Successful completion of all three quarters will satisfy four courses toward partial fulfillment of different GE requirement categories. These courses are designed to have a capstone research writing component in the third quarter which will satisfy the second quarter of the lower-division writing requirement—one of the four courses toward partial fulfillment of GE categories. To satisfy the second quarter of the lower-division writing requirement with an FIP sequence, students must concurrently enroll in Writing 39B either the fall or winter quarter and pass it with a grade of C or better, and also complete the FIP sequence with a grade of C (or Pass) or better in the third quarter of the sequence. For complete information about the FIP sequences, including course descriptions and prerequisites, see page 48.

NOTE: Undecided/Undecided students enrolling in an FIP sequence are not required to take University Studies 2.

University Studies 11A-B-C Persuasion and Social Change I, II, III (5-5-5). GE: One course toward category I–equivalent of Writing 39C, and three courses toward category IV.

University Studies 12A-B-C Computer Games as Art, Culture, and Technology I, II, III (5-5-5). GE: One course toward category I–equivalent of Writing 39C, one course toward category III, one course toward category IV, and one course toward category V.

University Studies 13A-B-C Environmental Studies I, II, III (5-5-5). GE: One course toward category I–equivalent of Writing 39C, two courses toward category II, and one course toward category III.

University Studies 14A-B-C Natural, Cultural, and Social Conditions of Music I, II, III (5-5-5). GE: One course toward category I–equivalent of Writing 39C, one course toward category II, one course toward category III, and one course toward category VII.

University Studies 15A-B-C Consciousness I, II, III (5-5-5) GE: One course toward category I–equivalent of Writing 39C, one course toward category III, and two courses toward category IV.

ensure that this requirement is fulfilled. Check with an EAP counselor at the Center for International Education to determine the programs in countries that fulfill this requirement.

F. The equivalent as determined by an appropriate and available means of evaluation. For information on availability of such examinations and testing schedules, consult the Academic Testing Center, (949) 824-6207. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, of one year of formal schooling at the sixth grade level or higher in an institution where the language of instruction is not English will meet the requirement. Appropriate documentation must be presented to substantiate that the course work was completed.

VII. Multicultural Studies. This requirement develops students' awareness and appreciation of the history, society, and/or culture of one or more underrepresented groups in California and the United States.

After completing this GE requirement, successful students should be able to do the following: demonstrate knowledge of one or more historically underrepresented groups' culture, history, and development in California and the United States; demonstrate an awareness and appreciation of cultural differences and inequities; and demonstrate an understanding that cooperation and mutual understanding among all cultural groups is needed to interact successfully in a culturally diverse society.

Students must complete one course from the following list. In fulfilling category VII, students are encouraged to use courses that are also being used in fulfillment of other GE categories. For example, Humanities 1C simultaneously satisfies category VII and a portion of category IV.

African American Studies 40A, 40B, 40C, 111A, 111B, 117, 138, 151, 153
Anthropology 85A, 125Z, 128B, 134D, 134M, 136K, 137A, 138R, 138T, 161T, 162B
Art History 163, 164A, 164B
Asian American Studies 60A, 60B, 60C, 110, 111, 112, 114, 115, 116, 117, 118, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 150, 151, 151C, 151D, 151E, 151H, 151J, 151K, 161, 162, 164, 166, 167
Chicano/Latino Studies 61, 62, 63, 64, 65, 102, 110A, 110B, 111A, 111B, 114, 116, 119, 122, 132A, 132B, 134, 135, 137, 138, 142, 143, 147, 151, 152, 152A, 153, 154, 155, 157, 158, 160, 163, 167, 168, 170, 171, 172, 174, 176, 178, 180, 182
Classics 175
Comparative Literature 9, 105
Criminology, Law and Society C156, C158, C161, C171, C172
Education 104E, 124, 143B, 155, 182
Film and Media Studies 130
History 15A, 15C, 146D, 146E, 146H, 148B, 150, 151A, 151B, 151C, 152, 152A, 152B
Humanities 1C
International Studies 177B
Linguistics 2
Music 78A, 78B
Planning, Policy, and Design 172
Political Science 61A, 124A, 124B, 124C, 124D, 126A, 126C
Psychology 174A, 174E, 174F
Psychology and Social Behavior 192Q, 192S
Public Health 134
Social Science 70B, 70C, 78A, 78B, 78C, 165, 167, 170E, 173G, 173H, 173I, 173K, 173L, 175B, 177B, 177D, 178C, 178D, 178E, 178H, 178J, 178K, 179
Sociology 51, 63, 65, 68A, 136, 161, 170C
Spanish 110C, 140A, 140B, 142
Studio Art 149
University Studies 14A-B-C (one course)*
Women's Studies 20, 50A, 50B, 50C, 120B, 139, 156A, 156B, 157A, 158A, 158B, 168A, 197

VIII. International/Global Issues. Courses in this category focus on significant cultural, economic, geographical, historical, political, and/or sociological aspects of one or more countries other than the United States.

After completing this GE requirement, successful students should be able to do the following: demonstrate specific knowledge of the cultural, historical, social, economic, scientific, and political aspects of one or more foreign countries, and the connections among these aspects; develop a broader understanding of the formation of different cultures and countries through the world; and be prepared to engage in positive interaction with peoples of different cultures and nationalities.

Students must complete one course from the following list. In fulfilling category VIII, students are encouraged to use courses that are also being used in fulfillment of other GE categories. In addition, category VIII may be satisfied by one quarter's participation in the UC Education Abroad Program (EAP) or one quarter's participation in an International Opportunities Program (IOP) with an approved IOP Credit Contract. Summer study abroad on an EAP, IOP (with approved IOP Credit Contract), or UCI Summer Session Travel Study program satisfies this requirement when the program is at least five weeks long and a student completes at least one course worth at least 4 quarter units.

Anthropology 2A, 20A, 30A, 41A, 121A, 121D, 121G, 121J, 125A, 125B, 125X, 127A, 134A, 134G, 135A, 135I, 136A, 136D, 138O, 138P, 138Q, 138S, 162A, 163A, 163I, 163K, 164P, 174A
Arabic 2A-B-C, S2AB-BC
Art History 40A, 40B, 40C, 42A, 42B, 42C, 155A, 155B, 155C, 155D, 162A, 162B, 162C, 167
Asian American Studies 171A
Chicano/Latino Studies 115A, 115B, 115C, 130, 133B, 161, 165, 177
Chinese 2A-B-C, 3A-B-C, 100A-B-C, 101A, 101B, 101C, 115
Classics 176
Comparative Literature 10, 40A, 40B, 40C, 100A, 107, 108, 160
Criminology, Law and Society C191
Dance 80, 82, 90A-B-C
Drama 40A, 40B, 40C, 120A, 120B, 120C
Earth System Science 15
East Asian Languages and Literatures 20, 55, 110, 116, 117, 120, 130, 140, 150, 155, 160, 170, 190, 192
Economics 13, 152A
Environmental Analysis and Design E113, E127
European Studies 101A, 101B
Film and Media Studies 160, 161
French 2A-B-C, S2AB-BC, 50, 101A, 101B, 101C, 110, 116, 117, 118, 119, 120, 125, 127, 139, 150, 160, 170, 171
German 2A-B-C, S2AB-BC, 50, 101, 102, 103, 104, 105, 115, 117, 118, 119, 120, 130, 140, 150, 160, 170
Global Cultures 103A-B
Greek 100A, 100B, 103, 104
Hebrew 2A-B-C

* Successful completion of all three quarters will satisfy four courses toward partial fulfillment of different GE categories. See First-Year Integrated Program on page 59 for details.

History 11, 18A, 21A, 21B, 21C, 50, 70A, 70B, 70D, 70E, 70F, 101, 102B, 103, 110A, 110B, 110C, 112C, 112D, 114, 115A, 116A, 116B, 117B, 118A, 118B, 118C, 120B, 120C, 120D, 120E, 122A, 122B, 122C, 123C, 123D, 124A, 124B, 126A, 126B, 126C, 127B, 127C, 128A, 128C, 130A, 130B, 130C, 131, 132, 133A, 134A, 134B, 134C, 134D, 158A, 158B, 161A, 161C, 163, 165, 169, 170D, 170E, 170F, 170G, 171D, 171E, 171G, 172D, 172E, 172F, 172G, 173D, 173E, 173F, 173G, 174G, 175F, 175G
Humanities 10, 100
International Studies 11, 13, 14, 111A, 112A, 113A, 121, 122, 130, 135, 151A, 152A, 155A, 160, 161, 161A, 162, 164, 165, 166, 167, 168, 170, 171, 172, 173, 177A, 177C, 177D, 177E, 177F, 179, 183E, 189
Italian 2A-B-C, 101A, 101B
Japanese 2A-B-C, S2AB-BC, 3A-B-C, 100A-B, 101A, 101B, 101C, 115, 180
Korean 2A-B-C, 3A-B-C, 101A, 101B, 101C, 115, 180
Latin 100A, 100B, 103, 104
Linguistics 1
Music 40B-C, 40D
Persian 2A-B-C, S2AB-BC
Philosophy 117
Planning, Policy, and Design 140
Political Science 6A, 41A, 42A, 43D, 44A, 141B, 141C, 141E, 142H, 143E, 146A, 151A, 151B, 151C, 151D, 151F, 152C, 152D, 152F, 153A, 153B, 153E, 154C, 154F, 154G, 155F, 156A, 157A, 172A, 172B
Portuguese 2A-B-C, 120A, 120B, 120C, 121
Psychology and Social Behavior 192R
Public Health 168
Religious Studies 5A, 5B, 5C
Russian 2A-B-C, 50, 140, 150, 190
Social Science 5D, 115D, 115E, 115H, 120, 123A, 152A, 170P, 172F, 172K, 173N, 173P, 173Q, 176A, 183E, 184F, 188A, 188B, 188C, 188D, 188E, 188F, 188G, 188H, 188I, 188J, 188K, 188L, 188M
Sociology 2, 44, 77, 165A, 170A, 170B, 175A, 175B, 175D
Spanish 2A-B-C, 2AB, 2BZ, 2MD, 2NS, S2AB-BC, 3A, 3B, 44, 50, 101A, 101B, 110A, 110B, 116, 119, 121, 130A, 130B, 130C, 150, 151, 160, 185
Vietnamese 2A-B-C, 3A-B-C, 115, 150
Women's Studies 60C, 110A, 110C, 120C, 165B, 165D, 166A, 167A, 167B

Or, students may complete one of the following fourth-quarter language options:

A. Credit for four years of high school study or its equivalent in a single language other than English with a C average or better in the fourth year.

B. A score of 4 or 5 on a College Board Advanced Placement Examination in a language other than English. NOTE: Students who earn a 3, 4, or 5 on the AP Chinese Examination must take the UCI Chinese placement examination to determine course credit.

C. A score of 620 or better on a College Board SAT Subject Test in a language other than English, with the exception of the test in Modern Hebrew for which a score of 540 or better is required.

D. The equivalent as determined by an appropriate and available mean of evaluation. For information on availability of such examinations and testing schedules, consult the Academic Testing Center, (949) 824-6207. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, of two years of formal schooling at the sixth grade level or higher in an institution where the language of instruction is not English will meet the requirement. Appropriate documentation must be presented to substantiate that the course work was completed.



IX. Laboratory or Performance. Every student at UCI should have at least one academic experience that goes beyond traditional classroom delivery. Examples include courses in which students conduct laboratory experiments, complete a performance in the fine arts, study abroad, participate in outreach efforts, or complete an academic internship, field study, or practicum. In satisfying category IX, students are encouraged to use courses that also satisfy another category's requirement.

After completing this GE requirement, successful students should be able to do the following: describe the connections between theory and practice as demonstrated within the context of the student's own experiential learning; and demonstrate enhanced development in at least two of the following areas: professionalism, communication skills, technology, interpersonal skills, working on a team, leadership, and problem-solving.

Students must complete one course from the following list:

Anthropology 161T, 176A
Asian American Studies 118
Biological Sciences 14, 101
Chemistry 1LB, 1LC, 1LE, H2LA, H2LB, H2LC, M2LA, M2LB, M2LC
Computer Science and Engineering (CSE) 21
Dance 12A, 12B, 12C, 14, 30A, 30B, 30C, 34, 40A, 40B, 40C, 50A, 50B, 50C, 52A, 52B, 52C, 110, 132A, 132B, 132C, 142A, 142B, 142C, 152A, 152B, 152C
Drama 30A, 30B, 30C
Education 100, 104D, 131, 132, 137, 153B, 160, 181B, 193
Engineering ENGR197A
Film and Media Studies 111, 117C, 120A, 120B, 120C, 197, 198
Humanities 195
Information and Computer Science 6, 21, H21, 192
Informatics 41
Music 160, 161, 162, 164, 176, 178
Nursing Science 170L
Physical Sciences 5, 105
Physics 3LB, 3LC, 7LA, 7LB, 7LC, 7LD
Public Health 195
Social Ecology 195
Social Sciences 182A, 194A, 194B, 196, 197
Sociology 114A
Studio Art 20, 30A, 30B, 40, 51, 71A, 71B, 81A, 81B, 91
University Studies 10, 185, 192, 195, 197D

NOTE: Some of the category IX courses have required corequisites; see course descriptions for details.

School, Departmental, and Major Requirements

In addition to the University and UCI requirements listed above, each undergraduate student must satisfy the degree requirements for the major and, if applicable, the minor or concentration selected. UCI, school, and departmental or major and minor requirements may overlap; courses taken to fulfill a school or departmental requirement may also help fulfill the UCI general education requirement. Students are urged to make sure that they understand how many courses are permitted to satisfy more than one requirement. Information on specific degree requirements and courses is available in the academic unit sections of this *Catalogue.*

Students must declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation), and should make certain that the background and the preparation prerequisite to junior and senior work in the major have been accomplished. Transfer students should read the section on Information for Transfer Students: Fulfilling Requirements for a Bachelor's Degree.

Students should note that with the exception of courses designated Pass/Not Pass Only, courses taken Pass/Not Pass may *not* be used to satisfy specific course requirements of the student's school and major, unless authorized by the appropriate dean. Additional information on grading is located in the Academic Regulations and Procedures section.

Minor Programs

For certification in a minor, a student must obtain a minimum overall grade point average of at least C (2.0) in all courses required for the minor program. No more than two courses applied to a minor may be taken Pass/Not Pass. Completion of the minor is noted on a student's transcript. (Students are *not* required to minor in a program in order to graduate from UCI.)

Application for Graduation

In order to receive a degree, an undergraduate student must submit an online Application for Graduation via the Student Access link at http://www.reg.uci.edu no later than the published deadline. Specific deadline dates for filing are established quarterly so that candidates' academic records can be reviewed to verify that all graduation requirements have been met. These dates vary among academic units. Students should contact their academic counseling office for deadline and degree audit information.

INFORMATION FOR TRANSFER STUDENTS: FULFILLING REQUIREMENTS FOR A BACHELOR'S DEGREE

This section provides a guide for transfer students in understanding how their course work from another collegiate institution applies to fulfilling UCI degree requirements. Transfer students should use this information in conjunction with the previous section, Requirements for a Bachelor's Degree. Transfer students are required to meet University, general education, school, department, and major requirements described in the *Catalogue.* The courses and descriptions in this *Catalogue* may be used by prospective transfer students as a guide for selecting courses of similar content and purpose in their own institutions. No student who has taken a course which is accepted for credit by the Office of Admissions and Relations with Schools (OARS) and which has been mutually determined with a community college as being acceptable toward completion of the UCI general education requirement shall incur any loss of credit in satisfaction of the requirement.

Transfer students are *strongly* advised to check with the academic counselor in their prospective major or OARS about courses that may be used to satisfy UCI requirements.

Transfer Students: Completion of the UCI General Education Requirement

Students transferring to UCI must satisfy the UCI general education (GE) requirement by completing either: (a) the current UCI GE requirement, (b) one of the options listed in the Catalogue Rights section, or (c) the Intersegmental General Education Transfer Curriculum.

Transfer students should not feel that the UCI GE requirement must be completed prior to matriculating to UCI. The GE requirement, which must be completed prior to graduation, may be satisfied by college-level courses appropriate to UCI offerings and may be met *at any time* during the undergraduate years, *except* in the case of the lower-division writing requirement, which must be completed within the first three quarters of residency at UCI.

NOTE: Transfer students should be aware that UCI is on the quarter system. For the purpose of counting courses for the UCI GE requirement, one semester course is equivalent to one quarter course, and two semester courses are equivalent to three quarter courses.

INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM

California community college transfer students may receive credit for the UCI GE requirement by completing the Intersegmental General Education Transfer Curriculum (IGETC). The IGETC consists of a series of subject areas and types of courses which will satisfy the general education requirements at any campus of the University of California. Fulfillment of the IGETC does not satisfy the UCI upper-division writing requirement.

Students who do not complete IGETC prior to transfer may be eligible for partial certification from their community college. Partial certification is defined as completing all but two (2) courses on the IGETC pattern. **Warning:** Students need to meet minimum UC transfer admission requirements. Therefore, partial certification that acknowledges a deficiency in Area 1 and/or Area 2 may also indicate a student does not meet minimum transfer requirements.

Please note: (1) IGETC must be completed in total or partial IGETC certification must be completed prior to enrolling at UCI; (2) students are responsible for requesting IGETC certification from their community college; and (3) the IGETC certification should be submitted to the UCI Office of Admissions and Relations with Schools no later than the end of the first quarter of UCI enrollment.

Courses used to fulfill the IGETC must be completed with a grade of C or better. (Courses may also be taken on a Pass/No Pass basis provided Pass is equal to a letter grade of C or better.)

Lists of specific approved courses which may be taken in fulfillment of the IGETC are available from California community colleges and at http://www.assist.org/.

Intersegmental General Education Transfer Curriculum

Area 1. English Communication: One course in English composition and one course in critical thinking/English composition.

Area 2. Mathematical Concepts and Quantitative Reasoning: One course in mathematics or mathematical statistics which has a prerequisite of intermediate algebra.

Area 3. Arts and Humanities: At least three courses with at least one from the arts and one from the humanities.

Area 4. Social and Behavioral Sciences: At least three courses from at least two different disciplines.

Area 5. Physical and Biological Sciences: At least two courses, with one from the physical sciences and one from the biological sciences; one course must include a laboratory.

Area 6. Language Other Than English: Proficiency equivalent to two years of high school courses in the same language.

Transferability of Credit

The University is committed to serve as fully as possible the educational needs of students who transfer from other California collegiate institutions. The principles covering transferability of unit credit and course credit are explained below and, unless otherwise indicated, are much the same whether transfer is from a two-year or a four-year institution.

Duplicate Credit Prohibited. Students may not receive unit credit or earn grade points for college courses in which the content duplicates material of a previously completed course or examination for which the student has been granted college credit. See page 44 for exceptions related to Advanced Placement and International Baccalaureate credit. See page 68 for exceptions related to the repeat of deficient grades.

UNIT CREDIT FOR WORK TAKEN ELSEWHERE

The University of California grants unit credit for courses completed at other accredited colleges and universities when such courses are consistent with the functions of the University as set forth in the Master Plan for Higher Education in California. Equivalent advanced standing credit from institutions on the semester calendar may be determined at a ratio of one semester unit to one and one-half quarter units. (To graduate from UCI a minimum of 180 quarter units, equivalent to approximately 45 UCI quarter courses, are needed.)

Community Colleges

A student may earn a maximum of 105 quarter units (70 semester units) at a community college toward a University degree. No further unit credit may be transferred from a community college, although subject, major, or general education credit for courses taken will still be granted.

Students anticipating transfer to UCI are urged to consult with their community college counselors. The counselors, with the aid of that college's UC Transfer Course Agreement (UCTCA), can advise students about California community college courses and units which will transfer to the University. In addition, staff in the UCI Office of Admissions and Relations with Schools can advise students about the transferability of courses. UCTCAs for all California community colleges are available at http://www.assist.org/.

Four-Year Institutions

Unit credit is granted for courses consistent with the University of California's functions and which have been completed in colleges or universities accredited by the appropriate agencies. While limitations of credit may be imposed in certain subject areas, these are consonant with the curricula for all students in the University of California. No defined maximum number of units which can be earned toward the degree is set for students transferring from four-year institutions. However, see the Residence Requirement in the UCI Requirements section.

University of California Extension

Extension courses prefixed by XB, XD, XI, XR, XSB, and XSD are granted unit credit on the same basis as courses taken in residence at any accredited collegiate institution.

Students intending to transfer Extension course credit for a degree at another college or university should verify acceptance of the course with that institution. Resident students of the University of California must obtain the consent of the dean of their school or college prior to enrolling for credit in an Extension course. Extension courses are not accepted as part of the residence requirements of the University. Grades earned in University Extension are not used in calculating the University grade point average.

Decisions regarding the acceptability of extension courses taken in institutions other than the University of California rest with the UCI Office of Admissions and Relations with Schools. Decisions regarding the applicability of such courses toward specific degrees and majors rest with the student's academic dean.

COURSE CREDIT FOR WORK TAKEN ELSEWHERE

The policies above refer only to the unit transferability of courses and are uniformly implemented on all UC campuses. Thus, courses which are determined by the University of California to be transferable are assured only of being granted elective course credit. The application of transfer work to specific course and major requirements is determined by the student's academic dean.

The Irvine campus makes every effort to eliminate all barriers to orderly progress from California community colleges into UCI's programs. To this end, courses from many California community colleges have been reviewed by UCI faculty and approved as acceptable toward meeting lower-division major or general education requirements. Although course equivalencies for the general education requirement may be liberally interpreted for purposes of transfer, courses to be applied toward school and departmental major requirements must be more precisely equated with UCI courses in unit value and in content.

All California community colleges have entered into articulation agreements with UCI so that the specific application of their courses to UCI's general education, school, and/or departmental major requirements may be readily communicated to prospective transfer students. By careful selection of courses, it is possible for students to satisfy some or all of the lower-division requirements of their intended program or school prior to transfer. It is recommended that transfer students complete as much of the lower-division general education, school, and major requirements as possible prior to transferring to UCI. Articulation agreements are available at http://www.assist.org/.

Students are urged to consult community college counselors or the UCI Office of Admissions and Relations with Schools for information on planning a program for transfer. Prospective transfer students with specific questions about course work in their major should contact the respective school or department at UCI.

REGISTRATION AND OTHER PROCEDURES

Except where noted, all information applies to both undergraduate and graduate students. Additional information concerning registration and academic policies applying only to graduate students is presented in the Graduate Division section later in this *Catalogue.*

SCHEDULE OF CLASSES AND REGISTRATION INFORMATION

The *Schedule of Classes* contains current class offerings including time, room, instructor, capacity, number of enrolled students and number of students on the waitlist, Web links, status (open, waitlisted, full), and more. Access the *Schedule of Classes* on the Registrar's Web site at http://www.reg.uci.edu. The *Schedule of Classes* is available just prior to the beginning of each quarter's registration period (six weeks before the end of the quarter).

The Registrar's Web site also includes registration and related information such as quarterly academic calendars, final examination schedules, and the Academic Honesty policy. The Registrar's Web site is the most timely source of information on new or changed policies, procedures, and fees that could not be included in the *Catalogue* because of the latter's annual publication schedule.

Registration Procedures

To receive academic credit for regular courses and other supervised instruction or research, a student must be officially registered prior to undertaking such activities. **The registration process consists of two steps: payment of fees and enrollment in classes.**

A Quarterly Academic Calendar of dates for enrollment and payment of fees is available on the Registrar's Web site at http://www.reg.uci.edu.

The general procedures for registration are:

1. Consult the appropriate academic advisor to develop an approved program of study. Secure necessary authorizations for courses that require special approval.

   New undergraduate students entering in the fall should attend one of the Student-Parent Orientation Program (SPOP) sessions during the summer for academic advising and enrollment.
2. Enroll in classes during the published registration period.
3. Pay required fees online or to the Central Cashier on or before the published deadline. Other outstanding obligations must be satisfied at this time also.

ENROLLING IN CLASSES

Using WebReg, students may add and drop classes, inquire about open sections, change their grading option or units for a variable-unit class, put themselves on an official waiting list, and list their confirmed class schedule. Immediate feedback on the availability of a class and a student's eligibility to enroll is provided; enrollment changes may be made during the registration period, open enrollment periods, and after instruction begins. Complete information about WebReg is available on the Registrar's Web site at http://www.reg.uci.edu.

Students must enroll in classes before the end of the second week of instruction. Students enrolled in zero (0) units at the close of business at the end of the second week of instruction are assessed a $50 late enrollment charge.

PAYMENT OF FEES

Registration fees are assessed quarterly and appear on ZOT Account Online (https://zotaccount.uci.edu/). Students who do not pay all required fees online or to the Central Cashier by the published fee payment deadline are subject to a $50 late payment charge.

LATE REGISTRATION

The student is subject to *both* late charges if fees are not paid online or to the Central Cashier and the student does not enroll in classes by the registration deadlines, published in the Quarterly Academic Calendar on the Registrar's Web site at http://www.reg.uci.edu.

Students who have not paid fees and/or have not enrolled in classes by 4:30 p.m. at the end of the third week of instruction will lose their student status. Visit the Registrar's Web site at http://www.reg.uci.edu for more information on the loss of student status.

To avoid the expense and inconvenience of late registration, students are urged to enroll and pay fees well before the published registration deadlines. Students with financial need should make advance arrangements with the Office of Financial Aid and Scholarships, or another source, to have funds available when fees are due.

Late registration (payment of fees and/or enrollment in classes) is permitted only in exceptional circumstances with the authorization of the student's dean. A student who is allowed to apply late and, as a result, must pay fees and enroll late, is required to pay both late charges.

CHANGE OF CLASS ENROLLMENT

Once instruction begins, a student may add or drop classes, change units in a variable unit course, or change the grading option via WebReg.

An undergraduate student may not enroll in more than 20 units or fewer than 12 units of course work during a given quarter without the permission of the student's academic dean or, for undecided/undeclared students, the Dean of the Division of Undergraduate Education. Changes to Pass/Not Pass grading must not cause the student to exceed the limitations to Pass/Not Pass enrollment. See the Pass/Not Pass section on page 67.

Graduate students may not enroll in more than 16 or fewer than eight units of graduate or upper-division credit without prior approval of the departmental graduate advisor and the Dean of the Graduate Division.

Students may add courses through the third week of instruction via WebReg.

Students may drop courses through the end of the second week of instruction via WebReg. Beginning the third week of instruction through the end of the sixth week of instruction, authorization to drop courses is required from the dean or equivalent of the school or academic unit offering the course and the dean or equivalent of the student's major.

Beginning the seventh week of instruction through the end of instruction, students may withdraw from a course only with the authorization of the dean or equivalent of the school or academic unit offering the course and the dean or equivalent of the student's major. Withdrawing from a course will result in the student receiving a W grade. W grades carry no grade points and are not calculated in the UC GPA.

Students may change the grading option and/or unit value of a course through the end of the second week of instruction via WebReg. Beginning the third week of instruction through the end of the sixth week of instruction, authorization to change the grading option or unit value is required from the dean or equivalent of the school or academic unit offering the course and the dean or equivalent of the student's major.

Individual courses may occasionally have unique deadlines due to course impaction or instructional needs. Students should refer to the *Schedule of Classes* for information on specific courses.

Students are responsible for their enrollments. They must officially drop or withdraw from classes they have ceased attending. Students cannot simply discontinue attendance in a class. Adds, withdrawals, and changes to class enrollment are not permitted after the last day of instruction.

WITHDRAWAL FROM THE UNIVERSITY

Undergraduate students who pay fees for a regular academic quarter and then decide to withdraw from the University must submit a Withdrawal form to the Registrar's Office after obtaining the signatures of their academic dean (or the Dean of the Division of Undergraduate Education, for undecided/undeclared students). Medical

students must submit the form to the Curricular Affairs Office in the School of Medicine. Law students must visit the School of Law Registrar's Office to obtain and submit the withdrawal form. This form serves two purposes: (1) a refund of fees, if applicable (see Fee Refund section); and (2) automatic withdrawal from classes.

The effective date of withdrawal is used in determining the percentage of fees to be refunded. This date is normally the date that the student submits the form to the appropriate dean for approval.

A W grade, indicating "withdrawal," will be recorded for each course in which enrollment is withdrawn if the student's effective date of withdrawal is after the end of the sixth week of classes. (See W grade in the Grading System section.)

A graduate student in good academic standing who wishes to withdraw and intends to return within one year should submit both the Withdrawal form and an application for a Leave of Absence. Further information appears in the Graduate Division section.

New undergraduate students are encouraged to seek advice from their admissions or academic counselor to understand the consequences of withdrawal and their eligibility to return.

If an undergraduate student plans to leave the University after completing all academic work for the latest quarter of enrollment and has not paid fees for the next quarter, a formal notice of withdrawal is not necessary.

LAPSE OF STATUS

A student's status may lapse for the following reasons:

Failure to pay required student fees by the prescribed deadline; failure to respond to official notices; failure to settle financial obligations when due or to make satisfactory arrangements with Campus Billing Services; failure to complete the admission health requirements; or failure to comply with admission conditions.

Each student who becomes subject to lapse of status is given advance notice and ample time to deal with the situation. However, if the student fails to respond to initial notices, action will be taken without further notice. A "hold" will be placed on all of the student's records and the student will be entitled to no further services of the University except assistance toward clearing the hold. A student must satisfy the conditions which caused the lapse of status before the hold can be cleared.

ENROLLMENT AT OTHER INSTITUTIONS

Various programs exist that enable currently registered UCI students in good standing to take courses at other UC campuses, as well as at California State University and California Community College campuses. More information is available from the Registrar's Office and from the academic advising offices.

ENROLLMENT IN UC IRVINE EXTENSION (ACCESS UCI)

If a UCI student wishes to enroll in a UC Irvine Extension course concurrently with enrollment in regular courses, the entire program of study must be approved in advance by the dean of the student's school (the Dean of the Division of Undergraduate Education, for undecided/undeclared students; the Dean of the Graduate Division, for graduate students). Fee information is available from the UC Irvine Extension Registration Office.

Change of Major

Each school or program has its own standards for change of major, and some majors are impacted, that is, more students apply than can be accommodated. Once a student selects a major, or decides to change majors, the student should visit the academic advising office for their prospective major to obtain current information about prerequisites, program planning, and policies and procedures. Information also is available on the Registrar's Web site at http://www.reg.uci.edu. In addition, a form called the Undergraduate Petition for Change of Major must be completed. The form is available from academic counselors and the Registrar's Office.

All schools with exceptional requirements have major-change criteria approved by the Academic Senate and published on the Division of Undergraduate Education Web site (http://www.changeofmajor.uci.edu). Students changing majors may meet the approved major-change criteria of the unit they wish to enter that are in place at the time of their change of major or those in effect up to one year before.

Transcripts and Verifications

RETENTION OF STUDENT RECORDS

The Registrar's Office maintains a permanent record of academic work completed by each student. Support documents for the academic record are kept for one year.

Students are strongly advised to carefully check their academic record quarterly. (Student copies of the academic record are available from the Registrar's Office shortly after the close of each quarter.) Discrepancies in the academic record should be reported to the Registrar immediately. After one year, it is assumed that the student accepts the accuracy of their academic record, and supporting source documents are destroyed.

Student academic records may not be changed after one year or, in some cases, in less than one year if Academic Senate regulations specify a shorter time limit. For example, the notation "NR," which means that no grade has been reported, must be removed within one quarter of subsequent enrollment or it will automatically be converted to the grade "F" or "NP" (under Senate Regulation IR 345).

TRANSCRIPT OF RECORDS

The official transcript of a student's academic record will be released only upon receipt of a signed request from the student authorizing the release. All outstanding debts to the University (with the exception of long-term financial aid loans not yet due and payable) must be paid in full before a transcript will be released. There is a $13 fee for each official transcript. See the instructions on the Registrar's Web site at http://www.reg.uci.edu.

Requests for transcripts by anyone other than the student whose transcript is being sought can be honored only (1) if the request is accompanied by a written authorization signed by the student whose transcript is sought, and (2) upon approval of the Registrar.

An unofficial transcript is available, free of charge, at the Registrar's Office, to students who present photo identification. Currently enrolled students can view their unofficial transcript in StudentAccess at http://www.reg.uci.edu.

VERIFICATION OF STUDENT STATUS

The Registrar's Office provides verifications of student status. Verifications may be needed for reference checks, bank loans, applications for good-student-driver insurance rates, and social security payments. There is a $13 fee for each verification, however verifications for the purpose of student loan deferments are free of charge. (See the instructions on the Registrar's Web site at http://www.reg.uci.edu.) For verification purposes, enrollment in 12 units or more in regular sessions is considered full-time status; enrollment in 6.0–11.9 units is considered half-time status; enrollment in 5.9 units or less is considered less than half-time status. Enrollment in eight units is considered full-time status for summer session.

Readmission

UNDERGRADUATE STUDENT READMISSION

Students are strongly urged to consider the readmission policy in formulating plans for leaving or returning to UCI. Every effort will be made to readmit UCI students who were in good academic standing at the time they ceased attending and who have filed readmission applications by the deadline.

Former UCI students seeking readmission must contact the academic advising office of the school or program which offers their intended major to initiate an electronic readmission application. A nonrefundable $60 Application Fee will be applied to the student's ZOTBill.

Readmission is subject to dean's approval and campus deadlines (August 1 for fall quarter, November 1 for winter quarter, and February 1 for spring quarter).

New undergraduate students who cancel registration prior to the first day of the quarter must reapply to UCI; they are not eligible to file for readmission as described above.

If a student has been academically disqualified from the University or has left the University while on probation or is subject to disqualification, or has lost their student status, the student must apply for readmission.

Transcripts for courses taken at other institutions must be submitted to both the Office of Admissions and the academic advising office of the school or program which offers the intended major of the student applying for readmission.

GRADUATE STUDENT READMISSION

A graduate student who withdraws and has not been granted a leave of absence approved by the Dean of the Graduate Division is considered to have lapsed student status (i.e., no longer has student status). A student whose status has lapsed must re-apply to a graduate program and can resume graduate study only if readmitted. The online *Application for Graduate Study,* including the nonrefundable application fee, must be submitted by the published deadline for graduate admission applications. Refer to the statement on readmission which appears in the Graduate Division section for additional information.

Commencement

UCI Commencement ceremonies are held each June for all students who graduate any quarter of that academic year. Additional information is available from the Commencement Office Web site at http://www.commencement.uci.edu/.

Application for Graduation. In order to receive a degree, an undergraduate student must submit an online Application for Graduation via the StudentAccess link at http://www.reg.uci.edu no later than the published deadline. Specific deadline dates for filing the application are established quarterly so that candidates' academic records can be reviewed to verify that all graduation requirements have been met. Students should contact their academic advising office for deadline and degree audit information.

Graduation *in Absentia.* Undergraduate students with a period of absence for more than one certifying term may become eligible to graduate *in absentia* only after they have re-opened their academic records by filing for readmission. Though not subject to registration fees, students will be required to pay the readmission fee.

If the period of absence is for no more than one certifying term, an application to graduate *in absentia* is required; however, the readmission fee is not required.

To apply to graduate *in absentia,* follow the same readmission procedure as outlined in the section above on Undergraduate Student Readmission. A Statement of Legal Residence is not required.

Diplomas. Students are advised by mail when their diplomas are available, which is five months after the quarter in which the student graduated ends. Students may pick up their diplomas at the Registrar's Office or authorize the Registrar to send their diplomas by certified mail, or registered air mail to locations outside the United States. All outstanding debts due to the University, with the exception of long-term financial aid loans, must be paid in full before a student's diploma will be released.

ACADEMIC REGULATIONS AND PROCEDURES

Except where noted, all information applies to both undergraduate and graduate students. Additional information concerning academic regulations applying only to graduate students is included in the Graduate Division section.

Grading System

A — Excellent (4.0 grade points per unit)

B — Good (3.0 grade points per unit)

C — Average (2.0 grade points per unit)

D — Lowest passing grade (1.0 grade point per unit)

F — Not passing (no grade points)

I — Incomplete

P — Pass (equal to grade C or better)

NP— Not Pass (equal to grade C- or below)

S — Satisfactory (equal to grade B or better; graduate students only in courses designated by the Graduate Council)

U — Unsatisfactory (graduate students only in courses so designated by the Graduate Council)

IP — In Progress (restricted to certain sequential courses, so designated by the Subcommittee on Courses or Graduate Council, for which the final quarter grade of a multiquarter course is assigned to the previous quarter(s) of the sequence).

NR— No Report (given when an instructor does not submit final grades for a class or individual grades for students whose names appear on the official class roster; NR becomes an F or NP after one quarter of subsequent enrollment or at the end of the quarter immediately preceding award of the degree, whichever comes first. The instructor may replace an NR with a grade within one quarter of subsequent enrollment or may authorize the student to drop the class, which would result in the NR becoming a W).

UR— Unauthorized Repeat. A UR notation is recorded for the grade when a student already has a passing grade for a nonrepeatable course and has taken it again.

W — Withdrawal. A W grade is recorded on a student's permanent record for each course a student drops after the end of the sixth week of instruction in a quarter. Courses in which a W has been entered on a student's record carry no grade points, are not calculated in the UCI GPA, and will not be considered as courses attempted in assessing the student's satisfaction of the normal progress requirement.

Plus and minus suffixes may be attached to the grades A, B, C, and D.

The academic record may not be altered except in those cases where a documented procedural or clerical error has occurred.

GRADE POINTS AND GRADE POINT AVERAGE

Grade points are assigned on a four point basis: A, 4 points per unit; B, 3 points per unit; C, 2 points per unit; D, 1 point per unit; F and I, zero points. Plus or minus suffixes modify the above by plus or minus 0.3 grade point per unit, with the exception of the A+ grade which is assigned 4 points per unit.

Requirements for a bachelor's degree include the accumulation of baccalaureate credit for a minimum of 180 quarter units with an average of at least C (grade point average of at least 2.0). A course at UCI normally offers four quarter units of credit, and, in the following text, the term "course" may be understood to carry four units. The grade point average is the sum of all accumulated grade points (grade points earned in a course taken for a letter grade times the unit value of the course) divided by the sum of all units attempted. P, NP, S, U, NR, IP, and I grades, as well as workload credit, are excluded in computing grade point average.

Baccalaureate credit counts toward degree requirements and is used to compute the grade point average. Workload credit is used to determine full-time status for financial aid, housing, student loans, and other purposes. For most courses at UCI, baccalaureate credit and workload credit are identical. Courses differing in this credit or "workload credit only" courses are identified in the course description.

It should be noted that final grades as reported by professors are normally permanent and final. A professor may not change a final grade except to correct a clerical or procedural error. Clerical or procedural errors should be corrected within one regular academic quarter after the grade is assigned. No grade may be revised by reexamination or, with the exception of I and IP grades, by completing additional work. If a student is dissatisfied with a grade, the student should review their work with the instructor and receive an explanation of the grade assigned. A grade may be appealed on any reasonable grounds to the instructor, the chair of the department, and the dean of the school. If the matter is not resolved, the student may go for counsel to the Office of the University Ombudsman.

Under circumstances explained in *The Manual of the Irvine Division of the Academic Senate* (Appendix II: Student Academic Grievance Procedures Relating to Nondiscrimination), a grade may be changed if the Academic Grievance Panel has determined that the grade was assigned on the basis of discrimination.

INCOMPLETE GRADES (UNDERGRADUATES)

The grade Incomplete (I) is assigned when a student's work is of passing quality but is incomplete for good cause. The I grade may be replaced by a permanent grade, provided the student completes the course work in a way authorized by the instructor and within the time limits expressed.

Registered students must complete the course work within the period set by the instructor, or within 12 months following the quarter in which the grade Incomplete was originally awarded, or prior to the end of the quarter immediately preceding award of the degree, whichever comes first. The instructor is not obligated to allow the maximum time period. The student must consult with the instructor to determine how the Incomplete may be made up. It is strongly recommended that the student and the instructor prepare a written agreement specifying how the Incomplete can be made up and the deadline for doing so. Once the work is completed within the time agreed upon by the instructor, the student should ask the instructor to submit an Academic Record Change Request to the advising office of the school in which the course was offered. The student should *not* reenroll in the course to make up the Incomplete.

Formerly registered students have a maximum of 12 months following the quarter in which the grade Incomplete was originally awarded to complete the course work. However, in exceptional individual cases involving the student's prolonged inability to pursue a course of study, extensions of up to two additional years may be granted by the instructor with the approval of the dean of the unit offering the course; students must petition for such an extension within 12 months following award of the I grade.

During the time allowed for replacing an I grade, the I grade will not be used in computation of a student's grade point average. However, if the incomplete course work is not completed in the manner authorized by the instructor and within the time limits stated above, the I grade shall automatically be replaced with the permanent grade of F, NP, or U, as appropriate in accordance to the grading option selected when the student enrolled in the course, and will be used in computation of the student's grade point average.

NOTE: Graduate students should refer to page 89 in the Graduate Division section for Incomplete (I) grade information.

PASS/NOT PASS

The Pass/Not Pass option is available to encourage students to enroll in courses outside their major field. Courses graded Pass or Not Pass are not included in computation of the grade point average which appears on a student's permanent record. However, if a student receives a Pass in a class, course and unit credit for the class is received, except as provided below. If a Not Pass is received, the student receives no credit for the class.

Some courses are designated by academic units as Pass/Not Pass Only. Students do not have the option of taking these courses for a letter grade.

The use of Pass/Not Pass is governed by all of the following provisions:

1. A student in good standing may take up to an average of four units per quarter on a Pass/Not Pass basis.
2. In addition, students may count a total of 12 units of courses designated Pass/Not Pass Only toward their graduation requirements.
3. A student who earns a grade of C (2.0) or better will have a Pass/Not Pass grade recorded as Pass. If the student earns a grade of C- or below, the grade will be recorded as a Not Pass, and no unit credit will be received for the course. In both cases, the student's grade will not be computed into the grade point average.
4. Courses taken under the Pass/Not Pass option may count toward the unit requirement for the bachelor's degree and toward the general education requirement. With the exception of courses designated Pass/Not Pass Only, courses taken Pass/Not Pass may not be used to satisfy specific course requirements of the student's school and major, unless authorized by the appropriate dean. No more than two courses applied to a minor may be taken Pass/Not Pass.

   Graduate students may take one course (up to four units) per quarter on a Pass/Not Pass basis. However, such courses are not considered part of the student's graduate program, may not be applied to the requirements for an advanced degree, and do not count toward the minimum number of units for which a graduate student must enroll.
5. Changes to or from the Pass/Not Pass option can be made during the enrollment period. No changes can be made after the first two weeks of classes without the approval of the dean of the student's school. No changes in the Pass/Not Pass option can be made after the last day of instruction of the quarter.
6. A student on academic probation may not enroll in a course with the Pass/Not Pass option unless the course is offered on that basis only.

SATISFACTORY/UNSATISFACTORY GRADES (GRADUATE STUDENTS ONLY)

Satisfactory/Unsatisfactory grading, unlike Pass/Not Pass, is not a student option. With the consent of the academic units involved, and upon approval of the Graduate Council, individual study and research or other individual graduate work undertaken by a graduate student may be evaluated by means of the grades S or U. Also, with the approval of the Graduate Council, certain graduate courses are graded S/U Only. Additionally, the grade S or U may be assigned provisionally in each but the last quarter of a graduate course extending over more than one quarter. Upon completion of the last quarter, letter grades (A to F) replace such provisional grades. When a grade of S or U has been assigned on a provisional basis and the student does not complete all quarters of the course sequence, the instructor may assign a final letter grade or the grade of I to replace the S or U, or let the grade of S or U stand as a final grade. The grade S is defined as equivalent to a grade of B (3.0) or better. No credit will be allowed for work graded Unsatisfactory.

NOTE: When adding a course via WebReg or add card, there is no option for S/U. In order to select S/U, students must first select the grade option and then, once the course has started, inform the professor of their preference for the S/U option, not a letter grade. (The Pass/Not Pass option does not correlate to the S/U option and should not be selected.)

GRADES IN PROGRESS

IP is a transcript notation, restricted to sequential courses which extend over two or more quarters, indicating that the final grade for the individual quarters will not be assigned until the last quarter of the sequence is completed. The grade for the final quarter is then assigned for all of the previous quarters of the sequence. No credit is given until the student has completed the entire sequence. IP notations may be given only for courses designated by the Academic Senate Subcommittee on Courses or Graduate Council for use of this notation. IP notations are not included in computations of the student's grade point average and do not contribute to the number of quarter units completed.

GRADES NOT REPORTED

A No Report (NR) is assigned when the student's name was on the official class roster but the instructor did not submit a final grade. A student who receives an NR must immediately contact the instructor and arrange for the removal or replacement of the NR. An NR becomes an F or NP after one quarter of subsequent enrollment or at the end of the quarter immediately preceding award of the degree, whichever comes first. NR transcript notations are not included in computations of the grade point average and do not contribute to the number of quarter units completed.

REPETITION OF COURSES

Undergraduate. Repetition of courses by undergraduate students not authorized by the Subcommittee on Courses to be taken more than once for credit is subject to the following provisions. Undergraduates may repeat courses only when grades of C-, D+, D, D-, F, or NP were received. (A C- earned before fall quarter, 1984, is not repeatable.) Unit credit for courses so repeated will be given only once, but the grade assigned at each enrollment shall be permanently recorded. In computing the grade point average of an undergraduate with repeated courses in which a C-, D+, D, D-, F, or NP (if repeated for a letter grade) was received, only the most recently received grades and grade points shall be used for the first 16 units repeated. In case of further repetitions, the grade point average shall be based on all additional grades assigned. Repetition of a course more than once requires approval in all instances of the School (or equivalent) in which the student is enrolled.

All courses which were originally taken for a letter grade must be repeated for a letter grade. Courses originally taken on a Pass/Not Pass basis may be repeated for a Pass/Not Pass or for a letter grade if the course is so offered.

Information regarding the repetition of language other than English courses is available in the School of Humanities section.

Graduate. A graduate student may repeat only once a course in which a grade below B or a grade of U was received. Only the most recently earned grade shall be used in computing the student's grade point average for the first eight units of repeated work; thereafter both the earlier and the later grades will be used.

Duplicate Credit Prohibited. Other than the exceptions related to the repeat of deficient grades as noted above, and the exceptions related to Advanced Placement and International Baccalaureate credit (see page 44), undergraduate and graduate students may not receive unit credit or earn grade points for college courses in which the content duplicates material of a previously completed course or examination for which the student has been granted college credit.

If a student repeats a course for which a passing grade has already been received and the course is not approved as repeatable for credit, the student will receive a UR and no credit will be given.

SATISFACTION OF THE WRITING REQUIREMENT

Students enrolled at UCI may take only UCI courses in satisfaction of the lower-division and upper-division writing requirements. Continuing UCI students may not take summer courses at another institution to satisfy lower-division or upper-division writing requirements. The two courses taken to fulfill the lower-division writing requirement must be completed with a grade of C or better (or a Pass or Credit grade equivalent to C).

1. Students who fail to attain a letter grade of C or better in Writing 37 must repeat the course or enroll in the equivalent. It is recommended that these students enroll in Writing 39A or 39AP followed by 39B-C to assure completion of this requirement. Students who fail to attain a grade of C or better in Writing 39C must repeat the course.
2. Students who fail to attain a grade of C or better in one or both courses of the Writing 39B-C sequence must repeat the course or courses in question.
3. Students who fail to attain a grade of C or better in at least two quarters of the writing component of the Humanities Core Course after satisfying the UC Entry Level Writing requirement by attaining a grade of C or better in Humanities 1A S/A, should substitute Writing 39C if they need one quarter of additional work to complete the requirement, or Writing 39B-C if they need two quarters to complete the requirement. Students who fail to attain a grade of C or better in Humanities 1A S/A, enroll in Humanities 1B S/A and attain a grade of C or better, but fail to attain a grade of C or better in the writing component of Humanities 1C, should substitute Writing 39C to complete the requirement.
4. Students who fail to attain a grade of C or better in either Humanities 1A S/A or Humanities 1B S/A, should substitute Writing 39A-B-C to complete the requirement.
5. Students who fail to attain a grade of C (or Pass) or better in each quarter of a First-Year Integrated Program (FIP) sequence should see their academic counselor.

The course taken to fulfill the upper-division writing requirement must be completed with a grade of C or better (or a Pass or Credit grade equivalent to C). See the UCI Requirements section for further information.

Students who have not completed the lower-division writing requirement before the beginning of their seventh quarter at UCI will be subject to probation. Students transferring to UCI normally should have satisfied the lower-division writing requirement before entering UCI; if, however, they have not, they must complete it within their first three quarters of enrollment or they will be subject to probation. Academic English/English as a Second Language students must complete the lower-division writing requirement before the beginning of the seventh quarter following the completion of their AE/ESL courses or they will be subject to probation.

Credit by Examination

An enrolled student may obtain credit for course material previously mastered by taking a special examination administered by a faculty member who normally teaches that course. Detailed procedures for obtaining credit by examination may be obtained from the advising office of the school which offers the course. Approval of any petition for credit by examination must be obtained from the dean or designee of that school *before* the examination can be administered. After the dean has signed the petition, the student must have it validated by paying a $5 Credit by Examination service charge at the Cashier's Office.

The instructor giving the examination retains the prerogative (1) to decide whether the course can be taken by examination, (2) to determine the form such an examination may take, and (3) to stipulate whether the grade will be reported as Pass/Not Pass or as a letter grade (e.g., A, B, C, etc.).

A student may take the examination for a particular course only one time. After receiving the grade, the student may accept it or reject it. If the student is not satisfied with the grade received on the examination, the student may choose not to receive credit or a grade. If the student does choose to accept the results of the examination, grades and grade points (if applicable) will be entered on the record in the same manner as those for regular courses of instruction.

Independent Study: Undergraduates Only

A unique class option is available primarily to upper-division students at UCI. The independent-study option allows the student to plan with the instructor a course having a clear relationship to the student's academic program. The plan for the course will include a reading list, a group of assignments, examinations, papers, or similar evidence of intellectual achievement on which academic credit will be based. A description of the course and of its requirements must be approved by the instructor responsible for it and by the department chair or dean. Independent-study credit for undergraduates is limited to five units per quarter.

Final Examinations

Final examinations, or their equivalent, are obligatory in all undergraduate courses except laboratory and studio courses, as individually determined by the Subcommittee on Courses. Normally each such examination shall be conducted in writing and must be completed by all participants by the time scheduled by the Registrar for the quarter in question. These examinations may not exceed three hours duration. Special arrangements may be made for disabled students.

Examinations normally are not required in laboratory and studio courses. At its option, the department concerned may require a final examination subject to prior announcement in the *Schedule of Classes* for the term.

Final grades from professors are due in the Registrar's Office within 72 hours after the final examination.

Student Copies of Quarterly Grades

After each quarter, a complimentary copy of the student's permanent record is available from the Registrar's Office. On the copy, the student will find grades for all the quarters taken at UCI, a computation of grade point average at the University of California, and a list of the University requirements completed (UC Entry Level Writing, American History and Institutions).

Declaration of Major

All students are required to declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation) or they will become subject to disqualification from further registration in the University.

Undergraduate Scholarship Requirements

Requirements for a bachelor's degree include the accumulation of credit for a minimum of 180 quarter units with an average of at least C (grade point average of at least 2.0).

CLASS LEVEL

Undergraduate students are classified as freshman, sophomore, junior, or senior students, based on the total number of units completed, as follows:

Freshman	0	—	44.9
Sophomore	45.0	—	89.9
Junior	90.0	—	134.9
Senior	135 +		

COURSE LOAD LIMITS

An undergraduate may enroll in as few as 12 units or as many as 20 units. To enroll for more than 20 units or fewer than 12 units, students must obtain the authorization of their dean or, for undecided/undeclared students, the Dean of the Division of Undergraduate Education. Information about the Reduced-Fee Part-Time Study Program is available in the Expenses and Fees section of the *Catalogue.*

ACADEMIC STANDING

To remain in good academic standing a student must maintain a grade point average of at least 2.0 and make progress toward the degree at a satisfactory rate.

An undergraduate student normally is subject to academic probation if at the end of any quarter the grade point average for that quarter, or the cumulative grade point average, is less than 2.0.

A student whose grade point average falls below a 1.5 for any quarter, or who after two consecutive quarters on probation has not achieved a cumulative grade point average of 2.0 or a satisfactory rate of progress, is subject to disqualification.

NORMAL PROGRESS REQUIREMENT

Regular undergraduate students will become subject to probation or to disqualification from further registration in the University if they fail to make normal progress toward the baccalaureate degree, if they fail to declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation), or after declaring a major, if they fail to follow the program of study required by the academic unit of their major. Students who have selected undeclared status within a school may be subject to probation or to disqualification if they fail to follow a

program of study leading to completion of lower-division school requirements.

A. Normal progress for all regular undergraduate students is defined in the following table, in terms of quarter units completed at the end of quarters enrolled.

Quarter	Normal Progress	Subject to Probation	Subject to Disqualification
1	12–15	8–11	7
2	26–30	18–25	17
3	41–45	27–40	26
4	56–60	41–55	40
5	71–75	56–70	55
6	86–90	72–85	71
7	101–105	88–100	87
8	116–120	105–115	104
9	132–135	124–131	123
10	148–150	141–147	140
11	164–165	159–163	158
12	180	—	—

NOTE: This table is effective fall 2005. Students who began college prior to fall 2005 should consult their academic counselor.

B. Status Determination:

1. Undeclared students who have completed the number of units specified in the given quarter of their enrollment, as shown in the table above, and are following a course of study prescribed by their school are making "Normal Progress."
2. Students who have declared a major must follow the program of study required for their major, as well as complete the units specified in the given quarter of their enrollment, as shown in the table above, in order to make "Normal Progress." Students must declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation).
3. Students who fail to make Normal Progress as defined in (1) or (2) above are subject to being placed on probation by the faculty of their academic unit or its designated agent, or for first-year undecided/undeclared students, by the Faculty Board for Undecided/Undeclared Students or its designated agent.

C. Students who have completed two consecutive quarters on academic probation without having achieved at the end of that period at least the normal rate of progress specified under (A) and (B) above are subject to disqualification.

D. For purposes of calculating "Normal Progress," "Subject to Probation," and "Subject to Disqualification," students admitted to the University with advanced standing will be classified with respect to quarter of enrollment at entrance in accordance with the following table:

Quarter at Entrance	Advanced Standing Quarter Units at Entrance
1	0–14
2	15–29
3	30–44
4	45–59
5	60–74
6	75–89
7	90–104
8	105–119
9	120–134
10	135–149

E. Units earned under the following two circumstances are not to be counted toward determination of the quarter at entrance under (D) above: (1) Advanced Placement Examination; (2) concurrent enrollment in college courses while in high school.

F. UCI students will have the units and grade points of courses taken through Access UCI transferred to their record when they have been admitted or readmitted to regular student status. Units taken through Access UCI will not be counted toward determination of Advanced Standing Quarter Units at Entrance if they are taken under the circumstances cited in sub-section E.

G. The quarter of enrollment at entrance of students (including baccalaureate degree candidates who already hold a baccalaureate degree) seeking admission to the University with 150 or more advanced standing units will be determined by the faculty offering the curriculum in which such students seek to enroll. This determination will be made consistent with the program required for such students to obtain the desired degree and with University residence requirements.

H. For purposes of this regulation students will be understood to have declared a major when they have been formally accepted by the faculty of a degree-granting program or its designated agent to pursue a defined course of study leading to a baccalaureate degree.

I. All undergraduate students are expected to graduate when they have completed the baccalaureate requirements of their declared major or majors.

The Normal Progress requirement described above is not to be confused with the Normal Academic Progress requirement for Financial Aid. The former has to do with academic standing, the latter with receipt of financial aid.

Probation is not a necessary step before disqualification. If a student becomes subject to disqualification, the complete record of grades and other accomplishments will be carefully reviewed by the responsible faculty authorities of the student's school or, for undecided/undeclared students, by a faculty authority designated by the Faculty Board for Undecided/Undeclared Students. If the record indicates little probability that the student will be able to meet the academic standards of the University of California, the student will be disqualified from further enrollment. Faculties of undergraduate-degree-granting units and the Faculty Board for Undecided/Undeclared Students are obliged by Academic Senate regulations to maintain a procedure under which a student may contest disqualification actions.

In order to transfer from one campus to another in the University of California or from one UCI school to another, a student who has been disqualified or who is on academic probation must obtain the approval of the appropriate faculty, or its designated agent, into whose jurisdiction the student seeks to transfer.

HONORS

Information about honors opportunities at UCI is found in the Division of Undergraduate Education section and the academic unit sections.

Quarterly Undergraduate Honors

Quarterly undergraduate honors are awarded in each school to students who achieve a quarterly grade point average of 3.5 or better in a minimum of 12 graded units.

Honors at Graduation

Of the graduating seniors, no more than 12 percent will receive academic honors: approximately 1 percent *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude.* The criteria used by each school in selecting candidates for these honors are included in each school's section of the *Catalogue.* A general criterion is that students must have completed at least 72 units in residence at a University of California campus. The student's cumulative record at the end of the final quarter is the basis for consideration for awarding Latin Honors. See page 52 for additional information.

Graduate Scholarship Requirements

For a graduate student, only the grades A+, A, A-, B+, B, and S represent satisfactory scholarship and are accepted toward the graduate degree. Students are expected to maintain satisfactory academic progress at all times. Information concerning graduate student course load requirements and satisfactory academic progress is given in the Graduate Division section.

Credits From Other Institutions or University Extension: Undergraduate Students

UCI undergraduate students who plan to enroll in courses at another institution or University Extension in either a summer or regular session and to use such courses to satisfy any UCI requirements should first consult with and secure prior approval from the academic dean or chair of their major who will determine if the credits are applicable to major and general education requirements.

UCI undergraduate students *must* submit an official transcript of all course work earned at another institution or college to the Office of Admissions and Relations with Schools. If such courses are determined by the Office of Admissions and Relations with Schools to be transferable, do not duplicate other credit granted, and do not exceed limitations of credit, then the units earned may be applied toward the total required for graduation.

Beginning winter 2009, matriculated UCI undergraduate students can elect to have the full course record included on their academic transcript for all courses taken through UCI Extension. The full course record contains course title, academic department, course number, grade, and grade points earned. This option also pertains to Access UCI courses (Concurrent Enrollment) taken by students who are applying for readmission. The full course record can be transferred to their academic record when they have been admitted or readmitted to regular student status.

Credits From Other Institutions or University Extension: Graduate Students

In accordance with UC Academic Senate policy, graduate students may be granted unit credit (not grade credit) toward a master's degree for a limited number of acceptable graduate-level courses completed at another institution or through University Extension before enrollment in graduate study at UCI. To receive such credit, the student must submit a formal petition, including an original transcript, after enrollment in graduate study. Approval of the student's graduate advisor and the Dean of the Graduate Division is required. The petition may be downloaded from http://www.grad/uci.edu/forms/.

While enrolled at UCI a graduate student may receive unit credit for graduate-level courses completed at another institution or through UCI Extension only with the prior approval of the student's graduate advisor and the Dean of the Graduate Division.

See the Graduate Division section for further information about graduate transfer credit and the University's Intercampus Exchange Program.

SUPPLEMENTARY EDUCATIONAL PROGRAMS

Summer Session and UC Irvine Extension

Gary W. Matkin, **Dean, Continuing Education**

SUMMER SESSION

Several summer sessions are held on the Irvine campus. The summer 2011 schedule is: Session I, June 20–July 27; Session II, August 1–September 7; overlapping 10-week session, June 20–August 26. Those who enroll in these sessions and take an academic program equivalent to a regular quarter may accelerate their progress toward a degree.

Courses offered include a wide variety from the regular session, supplemented by experimental offerings available only during the summer, including courses offered online. Admission is open to all university students, high school graduates, community members, and qualified high school students who have completed their junior year. Admission to Summer Session does not constitute admission to a regular session of the University; therefore, official transcripts of educational records are not required.

In addition to the regular curriculum, Summer Session also coordinates summer travel-study programs providing students with a sampling of collegiate life abroad. Programs are available in the following countries: England, Italy, Chile, Costa Rica, Japan, Spain, and Switzerland.

Information is available from the Summer Session Office in the UC Irvine Extension Building; telephone (949) 824-5493. Application forms and course listings are available in March.

Freshman Summer Start Program

Incoming first-year students are invited to take part in the Freshman Summer Start Program (FSSP). Students begin college during the summer, when the campus is more accessible and relaxed. They will be part of a small, highly motivated group of incoming students and have an opportunity to become familiar with the academic rigor and social scene of UCI under ideal conditions of maximum opportunity and support. For more information, including FSSP fees and schedules, visit http://www.summer.uci.edu/fssp or call (949) 824-0234.

UC IRVINE EXTENSION

UC Irvine Extension serves the continuing education needs of the community by providing more than 2,000 credit and noncredit courses, certificate programs, specialized studies, seminars, workshops, and lecture programs annually. Call (949) 824-5414 for a free quarterly catalogue.

Individual courses promote career advancement and lifelong learning, while certificate programs offer the opportunity for a distinctive achievement in a wide range of fields. Certificate programs are a sequence of courses designed to develop in-depth expertise to improve career opportunities. Extension offers 42 certificates and 17 specialized studies programs in fields as diverse as information technologies, engineering, management and leadership, sustainability, appraisal studies of fine and decorative arts, teacher education, medical product development, finance and investor relations, and paralegal.

To meet the specialized, in-house training needs of business and industry, UC Irvine Extension develops custom education and training programs. Free evaluations of training needs are available from the director of corporate training at (949) 824-1847.

In addition, Extension offers a wide variety of cultural enrichment programs in such areas as art and cultural appreciation, literature, creative writing, wine appreciation, film, screenwriting, and photography.

Most courses are held on campus in the evenings, on weekends, as well as online to accommodate the working professional locally, nationally, and internationally.

The general public also has an opportunity to take regular UCI courses without formal admission to the University, through Extension's ACCESS UCI Program (also know as concurrent enrollment). Courses are available on a space-available basis with the approval of the course instructor and/or academic department. Call (949) 824-5414 for more information.

Several unique programs complement UC Irvine Extension. The Women's Opportunities Center (WOC) provides resources and support for individuals who are in need of career and life planning programs and services; telephone (949) 824-7128. The Osher Lifelong Learning Institute offers a wide variety of educational and cultural programs for the retired or semi-retired intellectually active adult, all for one annual membership fee. Institute members are also eligible for a 30 percent discount on most Extension courses on a space-available basis. For more information, call (949) 451-1403.

UC Irvine Extension also is actively involved in OCTANe@UCI, UCI's contribution to innovation-based economic growth in Orange County. OCTANe@UCI designs and executes programs that connect Orange County companies, entrepreneurs, and investors with UCI researchers and their projects. These programs are specifically intended to benefit entrepreneurs and companies in the information technology and biomedical industries. OCTANe@UCI provides a forum to exchange ideas to accelerate and foster innovation. Program attendees include entrepreneurs, venture capitalists, investors, large-company executives, UCI researchers, and students. For more information, visit http://www.octane.uci.edu.

UC Irvine is also a member of the OpenCourseWare Consortium (OCW). In joining the consortium, UCI has committed to strengthening the Open Educational Resource (OER) movement, placing UCI on a growing list of prestigious U.S. and international universities already members of the OCW Consortium, including the Johns Hopkins Bloomberg School of Public Health, Kyoto University of Japan, Massachusetts Institute of Technology, National Institute of Technology at Tiruchirappali in India, Paris Tech Graduate School, The Open University of United Kingdom, Tufts University, University of Notre Dame, and Yale. UC Irvine's membership in the consortium is consistent with its public and land-grant missions and its desire to play a significant role in contributing to the social welfare of the state, the nation, and the world. OER showcases the University's top instructional efforts and makes course materials free for everyone in the world. Availability of the learning assets and course materials is significant for educators, students, and self-learners. For more information, visit http://ocw.uci.edu.

UC Irvine Extension English and Certificates for Internationals (ECI)

UC Irvine Extension's ESL and Certificate programs prepare international students to pursue their educational objectives in U.S. colleges and universities, as well as provide opportunities for professional development. An intensive English program offers core courses in grammar, writing, reading and vocabulary development. Other topics include conversation and discussion strategies, listening, note-taking, debate, and public speaking. Elective courses such as TOEFL test preparation, business English, and idioms also are available.

Professional certificate programs for international students and professionals are offered in an accelerated full-time format. The fast-paced educational format helps individuals become more effective in their English communication skills, increasing their career potential in today's competitive global business environment.

Requests for information should be addressed to English and Certificates for Internationals, UC Irvine Extension, P.O. Box 6050, Irvine, CA 92616-6050; telephone (949) 824-5991.

An Academic English/ESL program is offered by the School of Humanities to students who have been admitted to UCI. Refer to the section on Admission of International Students in this *Catalogue* for information.

ROTC

Although actual ROTC courses are not taught on the UCI campus, a cross-town agreement allows qualified UCI students to participate in the Air Force Reserve Officers Training Corps (AFROTC) or the Army Reserve Officer Training Corps (Army ROTC). Academic units earned in these programs are counted as elective units toward fulfillment of UCI graduation requirements. Additional information is available from the Office of Admissions and Relations with Schools, 260 Aldrich Hall.

AIR FORCE ROTC

Through arrangements with the University of California, Los Angeles, Loyola Marymount University, and the University of Southern California, two- through four-year AFROTC programs are available to all qualified UCI students.

AFROTC offers a variety of two-, three-, and four-year scholarships. Scholarships provide tuition and fee payments and a tax-free stipend of at least $300 per month. Four-year scholarships for incoming students must be applied for before December 1 in the year prior to entering college. Students interested in the two-year program must apply by December 31 of the calendar year prior to the year they wish to enter the program. Successful completion of as little as four semesters or six quarters of AFROTC upper-division academic courses and leadership laboratories can lead to a commission as a Second Lieutenant in the Air Force.

More information is available at http://www.afrotc.com or from the Department of Aerospace Studies, University of California, Los Angeles, (310) 825-1742, e-mail: afrotc@ucla.edu, http://www.sscnet.ucla.edu/afrotc. Other detachments are located at Loyola Marymount University, (310) 338-2770, e-mail: det040@LMU.edu, http://www.lmu.edu/afrotc; and the University of Southern California, (213) 740-2670, e-mail: afrotcdet060@rotc.usc.edu. Information is subject to change; call or send e-mail for updates.

ARMY ROTC

Two-, three-, and four-year Army ROTC programs are available to all qualified UCI students. Successful completion of the ROTC program leads to a commission as a Second Lieutenant in the U.S. Army (Active, Reserve, or National Guard). Two-, three-, and four-year competitive scholarships which provide tuition and fee payments at UCI, payments for books, and stipends ranging from $350–500 per month are available. Qualified students currently serving in any Reserve or National Guard unit may transfer to the Army ROTC program to complete their commissioning requirements.

More information is available from the Department of Military Science, California State University, Long Beach, (562) 985-5766, http://www.csulbrotc.com.

LIFE ON CAMPUS

Student-Produced Media

UCI students publish the weekly campus newspaper entitled the ***New University;*** operate a radio station, **KUCI (88.9 FM);** produce ***Anthology,*** the UCI yearbook; and produce various alternative student news communications.

UCI Bookstore

The UCI Bookstore is owned and operated by the University of California to serve the students, faculty, and staff of UCI. Located in the UCI Student Center, the UCI Bookstore stocks all required or recommended textbooks, supplies, and exam materials that students need for their courses. The UCI Bookstore also has an extensive book collection to inspire, inform, and entertain the campus reader, from novels to technical and cultural reference books, to poetry, history, law, and medical books. UCI Anteater clothing and gifts are designed to boost school spirit. In addition, within the Bookstore, the UCI Computer Store carries computers, software, and accessories to fulfill technological dreams.

The UCI Bookstore is open Monday through Thursday from 8 a.m. to 7 p.m., on Friday from 8 a.m. to 5 p.m., and on Saturday from noon to 5 p.m. The Web site is always available at http://www.book.uci.edu. Telephone: (949) UCI-BOOK (824-2665); e-mail: books @uci.edu.

UCI Career Center

Students are strongly encouraged to visit UCI's Career Center early in their academic career. The Center assists undergraduate and graduate students with career decision-making and career planning through individual counseling, workshops, career programs, career fairs, employment opportunities, and graduate and professional school information. Vocational interest inventories are also available on a fee-for-service basis. The Center provides students many opportunities to connect with employers, alumni, and professional and graduate schools. The Center assists students seeking part-time and full-time employment opportunities; teaches job search skills and interviewing techniques; and provides job listings and offers an on-campus interview program (OCI). Students may easily access all job listings using their student ID number via ZotLink on the Career Center's Web site at http://www.career.uci.edu/.

The Center promotes experiential education and encourages UCI students to obtain career-related work experience in business, industry, and government. The Center sponsors the non-academic UCDC and Sacramento Internship Programs which select UCI undergraduate and graduate students for summer internships in Washington, D.C., and Sacramento, providing a behind-the-scenes look at the activities that shape and implement the nation's future course.

In addition, the Center offers services and programs to meet specialized needs of specific student populations, including disabled, women, culturally diverse, and disadvantaged students. The Career Center is located on the Ring Mall across from the Student Center and is open from 8 a.m. to 5 p.m.; (949) 824-6881; http://www.career.uci.edu/.

Child Care Services

Child Care Services includes six Centers offering programs for children from three months to 12 years of age. The programs are open to children of UCI students, faculty, and staff, with priority enrollment and tuition subsidy available to students at three of the Centers. For information contact (949) 824-2100; http://www.childcare.uci.edu/.

Counseling Center

The Counseling Center is the primary counseling and mental health agency for UC Irvine undergraduate and graduate students. Staff strive to assist students with academic success by developing dimensions of their well being. The Counseling Center provides short-term time-limited individual, couples, group, and family counseling, and also assists students with urgent care and some psychological testing. Psychiatric evaluation and intervention are available on a limited basis for students concurrently seen in therapy. A wide range of workshops and courses related to interpersonal and developmental issues, including cross-cultural interaction, intimacy and friendships, interpersonal communication, and coping and resiliency are offered annually. In addition, the Counseling Center provides support to the University community through crisis intervention, training regarding mental health issues, and outreach and consultation services. The Center's services are free of charge to currently enrolled students. Students with chronic and severe mental health issues needing long-term and extensive services are referred to other appropriate community providers. The Counseling Center is located on the second floor of Student Services I; (949) 824-6457; http://www.counseling.uci.edu/.

Campus Assault Resources and Education

Campus Assault Resources and Education (CARE) provides direct services and campus education for issues related to sexual assault, intimate partner violence, relationship health, and personal safety. The office provides consultation, individual and group counseling, and advocacy through legal and medical processes. CARE staff also provide awareness and prevention education through workshops and trainings, peer education programs, campuswide events, and passive educational campaigns. Annual events include Take Back the Night, Denim Day California, and the Clothesline Project.

CARE is located at 630 Aldrich Hall. All services are confidential and free of charge. For more information call (949) 824-7273 or visit http://www.care.uci.edu.

Campus Recreation

Campus Recreation provides UCI students, faculty, and staff with an opportunity to enhance their campus experience by developing and maintaining a physically active lifestyle through fitness and wellness, outdoor adventures, club sports, intramural sports, and activity classes. These programs are offered at the Anteater Recreation Center (ARC), ARC fields, and at other off-campus locations.

The **Anteater Recreation Center (ARC)** is a complete state-of-the-art sports and fitness facility featuring 20,000 square feet of strength and cardio space with 282 cardiovascular and weight machines, and more than 30 tons of free weights. In addition, there is a three-court gym, a rounded corner multi-use gym, an elevated running track, three racquetball courts, a rock climbing wall, lap and leisure pool, exercise testing, massage, five multipurpose rooms, babysitting, and a demonstration kitchen and classroom. Registered students have access to the facility with current UCI identification, and are not required to pay any additional membership fee. Faculty, staff, alumni, and UCI affiliates are welcome to purchase ARC memberships.

Fitness and Wellness provides an assortment of opportunities for participants to begin or improve their fitness program. The energetic ARC staff will provide assistance with equipment orientation and various program goals in the strength and cardio rooms. Personal training is available, as well as a diverse selection of fitness classes, which include step, body sculpting, and studio cycling. Campus Recreation also offers a variety of non-credit Activity Classes to students and ARC members that are fee based. These high-quality classes range from the classic sports of golf, tennis,

and swimming to the dynamic styles of martial arts. A wide array of dance classes, such as hip-hop, salsa, breakdancing, and belly dance, are also available for a small fee. For those who are looking for certifications, the ARC offers open-water scuba diving and CPR/First Aid classes throughout the year.

The **ARC Sports Field Complex** includes 25 acres of field and court surfaces. The lighted fields include space for four softball fields and six soccer/flag football fields. There are six lighted tennis courts and a recreational-size roller rink that are available for Campus Recreation programs and drop-in use. The two lighted basketball courts add to the basketball opportunities on campus.

Intramural Sports are structured leagues which are designed for the "everyday athlete." All activities feature skill and competitiveness. Sports leagues include basketball, bowling, dodgeball, flag football, floor hockey, indoor and outdoor soccer, softball, volleyball, and many more. Special events and tournaments range from badminton, racquetball, and swimming, to table tennis, tennis, track, and wrestling. Registration begins on the first day of each quarter. Participants may sign up as a team or as individuals.

The UCI **Club Sports** program presents a wide variety of student-initiated and student-managed sports. Students are able to learn a new sport, or participate in one they have been involved with in the past. Club sports may be competitive or recreational in nature. Many clubs travel to compete against other universities across the southland area, and some travel nationally. There are more than 30 clubs to choose from including badminton, biking, hiking, lacrosse, roller hockey, rugby, soccer, tennis, and volleyball.

The **Outdoor Adventure** program provides the UCI community with a mixture of outdoor recreational prospects which include sailing, rock climbing, a 50-foot-high Odyssey challenge course, and seasonal trips for hiking and cross-country skiing. The sailing program includes both sailing classes and the sailing club, UCISA. The classes range from beginning to advanced, and are offered quarterly. The sailing club is available for individuals who are interested in sailing on their own, as well as participating in various social activities with other sailors. The rock climbing program includes classes, wall membership, the use of all climbing equipment, and trained supervision. All students and ARC members are entitled to a free, first-time climb session, prior to signing up. Team Up! challenge programs are conducted on the Odyssey course, which is a team-building high ropes course located on the sports field behind the tennis courts. Customized team-building programs are accessible to groups or teams on a reservation basis. Team Up! programs, led by trained facilitators, teach communication, trust, and teamwork skills, while providing participants with the chance to be outside, to test their limits, and to have fun as a team. Team Up! is open to campus and community groups.

All UCI students and ARC members may register and participate in the preceding activities (Intramural Sports and Club Sports do have eligibility requirements). Up-to-date information including hours of operation, membership, and fitness class schedules are available on the Campus Recreation Web site at http://www.campusrec.uci.edu/. Equipment such as basketballs, volleyballs, racquets, gloves, towels, and other items may be rented or purchased from the ARC's Gear Up, (949) 824-6401.

Additional information is available from Campus Recreation Services (second floor, ARC), 680 California Avenue; (949) 824-3738.

Office of the Dean of Students

The Office of the Dean of Students offers diverse student services and programs which complement and enrich the educational and out-of-class life of UCI students. This is achieved through a comprehensive range of cultural, social, and intellectual opportunities which promote student learning and development. For additional information contact (949) 824-5181; deanstu@uci.edu; http://www.dos.uci.edu/.

CENTRAL OFFICES

The central office of the Dean of Students houses a number of services. More than 450 campus organizations with a combined membership exceeding 16,000 students serve a wide range of interests including academic, environmental, faculty/staff, international, multicultural, political, recreational, religious, service, social, and sports. Web site: http://search.dos.uci.edu/organizations.

The Greek community at UC Irvine is a diverse population comprised of over 40 fraternities and sororities that strive to uphold the oaths, values, and principles that they were founded upon. Over 2,100 undergraduate students, 10.5 percent of the undergraduate enrollment, make up the Greek population on campus and are active members in the UC Irvine and Greek communities. Fraternity and sorority members strive for high academic achievement and are honored by one of three Greek honor societies, Gamma Sigma Alpha, Rho Lambda, and Order of Omega. Throughout the year fraternity and sorority members raise money for philanthropic organizations and volunteer their time for service organizations. Greek life is a great way to be involved and engaged on campus, and membership in the fraternity or sorority lasts a lifetime. Web site: http://www.dos.uci.edu/greeklife.

To assist students in becoming more effective leaders, the Office of the Dean of Students offers a variety of leadership programs and opportunities. The **All-University Leadership Conference** is the cornerstone of UCI's leadership offerings. This annual weekend program occurs off campus and involves more than 240 emerging and established student leaders representing the full diversity of campus interest groups. The **Student Regent Recruitment Luncheon** is held during the winter quarter, prior to the application deadline. The current Student Regent informs interested candidates of the issues of the day and is available for questions and answers. The application for the Student Regent position is available online at http://universityofcalifornia.edu/regents. Information about leadership development programs is available from the Dean of Students Office and online at http://www.dos.uci.edu/leadership/.

The **Administrative Intern Program** provides participating students with administrative and leadership experience designed to develop personal and professional skills as well as to increase their knowledge of complex organizational structures. Approximately 25 students annually are assigned to campus administrative departments where they develop programs and projects. Academic credit is earned through participation in a weekly seminar entitled Administrative Internship (Management 198A-B-C; 4 units per quarter for a maximum of 12 units). Information is available from the Office of the Dean of Students; telephone (949) 824-5182.

The **Passport to Leadership Program** serves the entire student body with one of the most comprehensive leadership experiences on campus. The Passport program is geared at giving students the one-stop shop for leadership education and experience. The Passport program includes Leadership certificates which are awarded by the Office of the Dean of Students to participants who attend seven workshops. For additional information call (949) 824-5182.

The **University Affairs for Credit Course** (Uni Aff 1A-B-C) offers students an opportunity to work on campus projects with a University department to enrich their academic growth and development as well as the academic growth and development of UCI. Each student spends a minimum of 30 hours per quarter working on a proposed project under the supervision of a designated faculty or staff member. Students are required to write a three–five page

paper at the end of the course addressing the following: (1) description of the experience or project; (2) the impact of the experience or project upon the campus; and (3) the effectiveness (personally and externally) of the experience or project. Students may enroll in University Affairs for Credit for a maximum of three times (or 3.9 units), and the course is graded Pass/Not Pass only.

New Student Programs provides assistance and information to students who are in the process of transitioning to UCI from high school or transferring from another college, and coordinates a variety of orientation programs. The *New Student Handbook,* a handy resource guide to UCI, is available at http://www.newstudents.uci.edu/. New Student Programs is located in the Office of the Dean of Students, (949) 824-5182.

The Office of the Dean of Students also is responsible for the campuswide administration of **student discipline** for both graduate and undergraduate students. Information is provided in the booklet *University of California Policies Applying to Campus Activities, Organizations, and Students,* which is available from the Office of the Dean of Students; (949) 824-5590; http://www.dos.uci.edu/conduct/uci_policy.php.

A variety of other programs including the Welcome Week Anteater Involvement Fair and the Student Organization Recognition Night are coordinated through the Office. Additional information is available from the Office of the Dean of Students; (949) 824-5181; http://www.dos.uci.edu/.

RESOURCE CENTERS

The Office of the Dean of Students provides support for a number of campus resource centers.

The **Cross-Cultural Center (CCC),** established at UCI in 1974, was the first multicultural center instituted at any of the UC campuses. CCC offers a friendly atmosphere and supportive environment for UCI's diverse student body. It provides meeting space and serves as "home" for more than 70 registered multicultural organizations. Center facilities include two conference rooms and an executive board room for group meetings, lounges for socializing, a study room, and a computer lab. The annual Martin Luther King Jr. Symposium and the Rainbow Festival and Conference, both three-day programs that recognize and reinforce UCI's commitment to ethnic diversity, are major programs administered by CCC. The Center also supports a variety of annual special events such as African Consciousness Quarter, Asian/Pacific American Heritage Month, Mez de la Raza, Native American Heritage Month, and Pilipino American History Month. In addition, CCC sponsors the Faculty Colloquium designed to support the educational, cultural, and leadership development of UCI's ethnic and culturally diverse students. Involvement opportunities include the Reaffirming Ethnic Awareness and Community Harmony (R.E.A.C.H.) Program, Intern Program, and Volunteer Program. For additional information contact (949) 824-7215; http://www.ccc.uci.edu/.

The **Disability Services Center (DSC)** provides and coordinates accommodations and services that enable UCI students with disabilities to maximize their educational potential. Students with varying disabilities, including those with mobility, visual, hearing, learning disabilities, and chronic health problems, may be eligible for reasonable disability-related accommodations through this resource center. Staff assist students from the point of their admission to UCI through graduation. Specialized services may include testing accommodations, priority registration, document conversion, adaptive equipment, assistive technology, notetakers, interpreters, captionists, liaisons with faculty and campus departments, and information regarding disability advocacy in the university setting. The DSC Computing Lab provides adaptive computer technology and training. There is no cost to the student for the support services or accommodations provided by the Disability Services Center. Students are responsible for fully acquainting themselves with the detailed procedures for use of accommodations. These procedures are available on the Center's Web site at http://www.disability.uci.edu.

Students with disabilities may qualify for reasonable accommodations based on disability-related needs. Students must provide appropriate documentation about their disabilities to the Center. Documentation provided to the Center is confidential. It is the responsibility of the applicant or student to provide this documentation and, if necessary, to cover the cost for such documentation. This includes the cost for professional assessments for such disabilities as learning disabilities, attention deficit disorder, and psychiatric disabilities. Contact the Center or visit the Web site for more information about disability documentation requirements. In some cases there is need for recent or detailed documentation about the disability and/or periodic documentation updates. UCI reserves the right to determine the most effective and timely accommodations after consultation with the student about the disability and previous use of accommodations. The provision or use of a disability accommodation does not guarantee or ensure a certain level of achievement for the student. Students with disabilities must meet the same academic standards as all other students. Some academic accommodations may require approval of the chair or dean of the student's academic unit.

Students with disabilities who need accommodations (in particular, reading assistance, textbook conversion including e-text and Braille, American Sign Language interpreting services, real-time captioning services, and adaptive computing technology in campus laboratories) that must be planned or arranged in advance of the start of classes should contact the Disability Services Center as quickly as possible after admission to UCI. Failure to do so may delay or in some cases preclude the Center's ability to provide certain accommodations. This advance notice also allows the Center to document needs, discuss service procedures and student responsibilities, and determine the appropriate accommodations.

Additional information is available from the Disability Services Center; (949) 824-7494 (voice), (949) 824-6272 (TTY); e-mail: dsc@uci.edu; http://www.disability.uci.edu/.

The **International Center** promotes and facilitates international education and exchange by providing services and information to the UCI international population, affiliated offices, and the general campus community. Services include immigration advising and workshops for international students and scholars, and consulting services for campus departments. The International Center offers a variety of programs to provide support and resource information to the campus including orientation, tutoring, and other outreach programs and workshops.

All UCI international students and scholars must be aware of their responsibility of maintaining non-immigrant visa status. International students and scholars on F-1 and J-1 visas, and faculty and staff on UCI-sponsored employment visas, are required to report to the International Center upon arrival on the campus. Additionally, these students and scholars must maintain updated records with the International Center for the entire time of their stay at UCI to be in compliance with immigration regulations. For additional information contact (949) 824-7249; http://www.ic.uci.edu/.

The **Lesbian, Gay, Bisexual, Transgender Resource Center (LGBTRC)** promotes an open, safe, and inclusive campus environment for UCI's diverse lesbian, gay, bisexual, transgender, queer, questioning, intersex, and ally communities. LGBTRC provides programs, resources, and support services to raise awareness about lesbian, gay, bisexual, transgender lives and topics; to eliminate heterosexism, homophobia, and gender identity oppression; and to support the academic mission of the University. LGBTRC sponsors campuswide events, student activities, student volunteer and leadership opportunities, ally development programs, workshops and

seminars for campus courses and organizations, and consultation regarding matters of policy related to sexual orientation and gender identity.

The Center is open Monday through Friday, 9 a.m. to 5 p.m., and is located in G302 UCI Student Center; (949) 824-3277; e-mail: lgbtrc@uci.edu; http://www.lgbtrc.uci.edu/.

The **Center for Service in Action** is a resource center for students who are interested in volunteer and community service information. Resources and programs include Volunteer Placements, Quarterly Service Projects, Alternative Break, Service Learning, UCI Earth Day, MLK Day of Service, and the Community Service Funding Board. For additional information contact (949) 824-3500; http://www.volunteer.uci.edu/.

Veteran Services, located in G301 UCI Student Center, provides support services to veteran students, reservists, and eligible dependents of veterans. Assistance includes benefit certification, work-study, orientation, and outreach programs. For additional information, visit http://www.dos.uci.edu/veteran or call (949) 824-3500.

Policies Pertaining to Students Receiving Federal Education Benefits from the Department of Veterans Affairs

Veterans Affairs Academic Standing Requirement. All students receiving U.S. Department of Veterans Affairs educational benefits must be in good academic standing. An undergraduate student with a cumulative GPA below 2.0 or a graduate student with a cumulative GPA below 3.0 for two consecutive academic quarters will have their VA benefits terminated. Benefits will be reinstated if and when the undergraduate student's cumulative GPA is 2.0 or above or the graduate student's cumulative GPA is 3.0 or above. (*This policy is separate and distinct from the UCI Normal Progress Requirement and the UCI Academic Standing Requirement. The Veterans Affairs Academic Standing Requirement has to do with the receipt of VA benefits.)*

Readmission for Disqualified Graduate Students. Graduate students who are academically disqualified may be readmitted to the University with a recommendation from their academic unit and the Dean of the Graduate Division. See "Academic Disqualification" in the Graduate Division section of this *Catalogue* for more information.

Health Education Center

The UCI Health Education Center is dedicated to improving the health and well-being of students by promoting principles of wellness, prevention, and healthy life-style choices. The Center provides comprehensive information, educational programming, consultation, and timely referrals for students and the campus community about sexual health, alcohol and drugs, tobacco cessation, nutrition and physical exercise, eating disorders and body image, stress management, and emotional health. Resources include printed brochures and educational materials. Programs include student leadership opportunities through the Health Leaders program, field study assignments, and many health-related volunteer initiatives. There is a lactation station for breast-feeding mothers and a wellness room where guests may enjoy a massage chair and utilize relaxation techniques. Free anonymous HIV testing is offered weekly. The Health Education Center is open Monday through Friday, 8 a.m. to 5 p.m. and is located in G319 UCI Student Center; (949) 824-9355 (UCI WELL); healthed@uci.edu; http://www.health.uci.edu/.

Housing

ON-CAMPUS HOUSING

Housing Administrative Services coordinates application procedures and contracts for on-campus housing. Approximately 41 percent of UCI's student body is housed on campus. For more information, including housing rates for the 2010–11 academic year, visit http://www.housing.uci.edu/.

Undergraduate Housing

Residence Halls. Approximately 3,500 undergraduates live in UCI's two residence hall communities—**Mesa Court** and **Middle Earth**—which are within walking distance from the center of campus. Each community houses single undergraduates who are primarily freshmen between 17 and 20 years of age. The communities are composed of clusters of small, mostly coed buildings housing 48–75 residents in suite-style layouts. Student rooms feature cable television and Internet connections. Each hall has group study rooms, a living room for meetings or informal gatherings, a small kitchen, and card-operated laundry facilities. Both communities offer recreation rooms with video games, TV, and game tables; volleyball and basketball courts; and staffed computer labs.

Mesa Court and Middle Earth have complete food service and dining commons. Students who live in the residence halls participate in a prepaid meal plan. Meals are served three times daily on weekdays (with limited late night hours) and twice daily (brunch and dinner) on weekends. Menus offer a wide selection of foods, served cafeteria style, at self-serve cereal, deli, and salad bars, and at cook-to-order serving stations featuring cuisines from all over the world. For more information about meal plan options, visit http://www.ucidining.com. The halls close during the winter recess, and although they remain open during the Thanksgiving holiday and the spring recess, no meals are served.

Both Mesa Court and Middle Earth maintain a comprehensive residence life program, designed to help freshmen transition to college. Each hall has a live-in Resident Advisor who provides resources and support to freshmen residents. In each community, special interest halls or hall clusters provide educational programs and informal opportunities to get together with other students who hold similar interests. Community-wide social programs are also offered.

Rates for the 2009–10 academic year (late September through mid-June) were $12,590–$12,914 for a single room, $10,967–$11,291 for a double room, and $9,584–$9,908 for a triple room. (Rates include room and board and vary by the meal plan selected.) Charges are paid in quarterly payments. Rates for 2010–11 will reflect an increase.

Campus Village, an apartment community for transfer and continuing students who are single undergraduates under the age of 25, offers 200 two-bedroom apartments, housing four students each. Most units are furnished; all include a bathroom, carpeting, draperies, a stove, and a refrigerator. All apartments provide cable television and Internet connections. The Campus Village Community Center offers a variety of facilities and programs including a fitness center, recreation rooms, study rooms, and a computer lab with Internet access. Rates for the 2009–10 academic year (September–June), including utilities, were $4,931 per student for a furnished apartment and $4,409 per student for an unfurnished apartment. Campus Village also offers year-long (12-month) contracts to continuing students. Rates for this option in 2009–10 were $6,624 per student for a furnished apartment and $5,923 per student for an unfurnished apartment. No meal plan is included in the housing contract, however students may purchase a voluntary meal plan through UCI Dining (http://www.ucidining.com). These rates also include utilities and reservation fees. Rates for 2010–11 will reflect an increase.

Arroyo Vista is a community of 42 academic theme, fraternity, and sorority chapter houses for single undergraduates under the age of 25. Each house contains 8, 12, or 16 furnished, double-occupancy rooms (bed, desk, and wardrobe closet for each resident). Residents share bathroom facilities on each floor, a spacious living room with fireplace, a study room, a fully equipped kitchen with dishwasher and microwaves, and laundry facilities. All bedrooms in Arroyo Vista feature cable television and Internet connections. No meal plan is included in the housing contract. Students make their own meal arrangements, choosing to cook for themselves or to purchase a voluntary meal plan through UCI Dining (http://www.ucidining.com).

More than two-thirds of the houses are designated Academic Theme Houses, which are sponsored by academic programs and offer educational programs that advance both a student's academic interests and overall University experience. The remaining houses are available to fraternity and sorority chapter organizations; consult individual Greek chapters for information. The rate for the 2009–10 academic year was $5,255 for a double-occupancy room. Rates for 2010–11 will reflect an increase.

Graduate/Family Housing

Two on-campus apartment communities serve full-time graduate and medical students, and students with families (married, in a domestic partnership, and/or with custody of minor children). Both of those communities also serve undergraduates with families or who are single and 25 years of age or older.

Verano Place offers 862 one-, two-, and three-bedroom apartments. All have carpeting, draperies, a stove, and a refrigerator and provide cable television and Internet connections. They are attractive and considerably lower in rent than comparable units in the local communities. Monthly rents for 2009–10 ranged from $339–$566 for single students sharing an apartment and from $867–$1,132 for families. Rates for 2010–11 will reflect an increase.

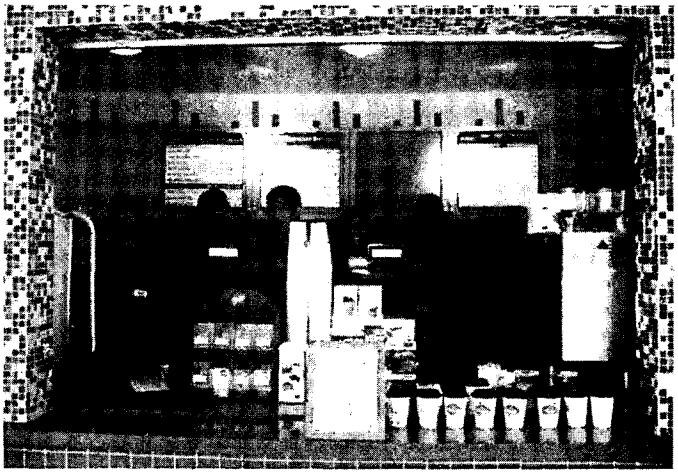
Palo Verde offers 652 apartments for full-time graduate students (single students, students who are married or in a domestic partnership, and those with families). All apartments have carpeting, draperies, a stove, and a refrigerator and provide cable television and Internet connections. Monthly rents for 2009–10 ranged from $597–$978 for single students sharing an apartment and from $743–$1,791 for families. Rates for 2010–11 will reflect an increase.

To Apply

Housing information and application instructions are available online at http://www.housing.uci.edu. Undergraduates apply for housing online via the Admissions Web site after receiving admissions notification and submitting their *Statement of Intent to Register* (SIR). Graduate applicants can also find housing information and a link to the online application on the Housing Web site. A $20 nonrefundable processing fee must accompany the housing application when it is submitted.

Two years of on-campus housing are guaranteed to all freshmen, and one year of on-campus housing is guaranteed to transfer undergraduate students who are single, under the age of 25, enrolling for fall quarter, and who meet the housing application and contract deadlines. To qualify for this guarantee, students must apply for housing and submit their *Statement of Intent to Register* (SIR) by the stated deadlines: May 1, 2010 for freshmen, and June 1, 2010 for transfer students. Applications received after these dates will be handled in the order received, as space becomes available.

The University of California, Irvine guarantees an offer of on-campus housing to newly admitted fall 2010 Ph.D., M.F.A., and J.D. students. Housing offers will be for one of five graduate housing communities and must be accepted prior to the first day of classes. Guaranteed housing extends until a student's normative time to degree for their academic program. For detailed information, visit http://www.housing.uci.edu/prospective/graduate/guarantee.asp.



Alternative Housing on the UCI Campus

Vista del Campo, Vista del Campo Norte, Camino del Sol, and Puerta del Sol Apartments—four privately owned and managed on-campus communities—offer furnished apartments with individual leases for UCI students who have completed their freshman year and are single or married/domestic partners without children. Vista del Campo and Vista del Campo Norte house both undergraduates and graduate students. Camino del Sol is an undergraduate community, and Puerta del Sol is graduate student community. More information is available at http://www.vistadelcampo.com, http://www.caminodelsolliving.com, or http://www.puertadelsolliving.com; or call for information: Vista del Campo, (949) 854-0900; Vista del Campo Norte, (949) 856-4600; Camino del Sol or Puerta del Sol, (949) 737-7000.

HOUSING OUTREACH SERVICES

Services are available to assist students looking for off-campus housing. The *Living Around UCI* guide contains a wealth of information about housing options in Irvine and other nearby communities, as well as a local directory for shopping, banking, utility companies, and other services. Students are encouraged to visit Housing Outreach Services, located in G465 Student Center, where off-campus housing listings and roommate listings are available. For more information, contact a Housing Advisor at (949) 824-7247, send e-mail to housing@uci.edu, or visit http://www.housing.uci.edu/och/.

UCI Hospitality & Dining

From a quick bite to eat to an elegantly served catered meal, UCI Hospitality & Dining Services is here to serve the campus community's dining needs, offering a variety of residential and retail dining to fit one's palette.

Dining locations are situated throughout the campus. Dining options at the Student Center include Quiznos, Wendy's, Panda Express, Jamba Juice, Bene Pizza & Pasta, Organic Greens-to-Go, and Wahoo's Fish Tacos. A Starbucks and Zot'n Go convenience store are located just outside the Student Center, and another convenience store is located by Social Sciences Lecture Hall. BC's Cavern Food Court is at Biological Sciences, adjacent to Aldrich Park. Cyber A Café is at the Claire Trevor School of Arts, and Café Med is located at the School of Medicine. Java City is located at Engineering, and the Espress Yourself coffee cart is located in the Berkeley Place courtyard.

Residential Dining commons include Pippin, Mesa, and Brandywine. All three locations have theme nights, award-winning chefs, made-to-order meals, and vegetarian and vegan options. Both Mesa and Brandywine have a late menu Monday through Wednesday.

UCI Catering provides a comprehensive list of items to choose from or the option to design your own menu. To view the menus, visit http://www.ucicatering.catertrax.com or call (949) 824-1423.

For more information visit UCI Hospitality & Dining Services in G318 Student Center, at http://www.food.uci.edu, or call (949) 824-4182.

UCI Student Center

The UCI Student Center has something for everyone. It features two food courts and a pub, as well as a newly updated games room with Xbox and a state-of-the art computer lab. The Center features 16 small-group study rooms, several lounges with designated study areas, a convenience store, and an outdoor stage for performances and speakers located in the beautiful Terrace Plaza. In addition, the UCI Student Center is home to a striking conference center with 31 meeting rooms. The Center also houses many campus entities such as Health Education, Dean of Students, and the Bookstore, as well as many commercial banking institutions and other services. To learn more about the UCI Student Center visit http://www.studentcenter.uci.edu/.

Student Government

ASSOCIATED STUDENTS

All UCI undergraduate students are members of the Associated Students, better known as **ASUCI**. ASUCI is the student representative body that advocates to and is liaison between the UCI administration, faculty, and staff.

ASUCI is comprised of three branches of government: the Executive Officers (five elected at-large members), Legislative Council (21 elected members), and the Judicial Board (seven appointed members). Guided by their constitution and by-laws, these student representatives manage the $18 per student quarterly fee that supports student life activities, advocacy programs, publications/communication, and professional support staff as well as essential campus services. For more information contact the Student Government offices at (949) 824-5547; ASUCI@uci.edu; http://www.asuci.uci.edu/.

ASUCI Student Life Activities include the annual Shocktoberfest, Homecoming, Wayzgoose, and Reggae festivals. On-going events include such programs as noon concerts, major concerts, comedy nights, and weekly movie screenings. In cooperation with Student Affairs and ASUCI, the award-winning *ANThology* yearbook publication hosts events such as Senior Information Day, Senior Portraits, and Senior Class Picnic.

ASUCI Advocacy programs include Elections (campus and local), Undergraduate Senate, UTeach, Anteater Mentorship Program, External Affairs, College Legal Clinic, Student Recommended Faculty Program, and the Visions Leadership and Lobby core seminar courses (1.3 units).

ASUCI Publications/Communication includes the Columbia Press Association Award-winning UCI Yearbook, *ANThology,* and the ASUCI Web site at http://www.asuci.uci.edu/, which is a great source of information about the organization.

ASUCI Services include the following:

Club and Organization Accounting: The ASUCI Business Office provides banking and accounting services to registered campus organizations.

Express Shuttle: The Express Shuttle program run by Student Government provides alternative transportation service to all students, staff, and affiliated members of the UCI community, with fixed shuttle routes to 55 designated stops on and off campus. The Express Shuttle carried more than 1.5 million passengers last year and facilitates campuswide efforts to reduce traffic and improve air quality while helping the UCI community access the services available on the expansive campus. For detailed information regarding services, routes, and schedules, visit http://www.shuttle.uci.edu.

UCItems and UCI Photo ID: UCItems is the campus specialty store featuring UCI and Greek apparel, custom silkscreening, banners, awards, and special promotions that include discount tickets to Edwards/Regal cinema, Disneyland, Universal Studios, Magic Mountain, Sea World, Knott's Berry Farm, and more. UCItems is also the place where the official UCI Photo ID cards are issued. The store is located in G203 UCI Student Center near the Zot Zone and is open Monday through Friday from 9 a.m. to 5 p.m.; telephone (949) 824-7555.

ASSOCIATED GRADUATE STUDENTS

All graduate and professional school students are members of the Associated Graduate Students (AGS). AGS works to improve the graduate student quality of life and functions as a liaison between graduate students and the UCI administration, faculty, and staff by addressing concerns and working to resolve grievances.

AGS also provides graduate students with numerous social and cultural events of benefit to the graduate community. In addition to hosting quarterly social events designed to create a sense of community, the organization allocates funds toward graduate student development and special projects. AGS also pays campus registration fees for all graduate student groups, both departmental and school-affiliated, or those organized around a common interest. These funds are allocated on a rolling basis to petitioning clubs and organizations on campus.

The AGS Council nominates graduate students for positions on UCI administrative, Academic Senate, and ad hoc committees and ensures graduate students have a voice in policy and decision-making on the UCI campus. AGS also works on systemwide issues affecting graduate and professional students by membership in the UC Student Association (UCSA). For more information visit http://www.ags.uci.edu/.

ASSOCIATED MEDICAL STUDENTS

The Associated Medical Students (AMS) Council, along with the AGS Council, represents the medical student body in all matters relating to the UCI campus, the UC Office of the President, and the community. Medical students are members of AGS and have access to those services. In addition, AMS utilizes a portion of the quarterly AGS fee to provide funding for medical student activities that benefit the School of Medicine community.

THE PAUL MERAGE SCHOOL OF BUSINESS STUDENT ASSOCIATION

The School's Council, along with the AGS Council, represents the graduate Business student body in all matters relating to the UCI campus, the UC Office of the President, and the community. Graduate Business students are members of AGS and have access to those services. In addition, the School's Council uses a portion of the quarterly AGS fee to provide funding for student activities that benefit The Paul Merage School of Business community.

Student Health Center

All fully registered students and students approved for part-time study are eligible to access services at the Student Health Center, located at the corner of East Peltason and Pereira Drive. Facilities and services include outpatient clinics staffed by certified, licensed medical professionals; nurses with expertise in college health; a clinical laboratory; radiology; and a pharmacy. General medical clinics are held from 8 a.m. to 5 p.m., Monday through Friday, during the academic year and are available by appointment or on an urgent-care basis. Summer hours are slightly adjusted. Specialty

clinics are held at variously scheduled times by appointment and include optometry, dental, mental health, dermatology, women's health, orthopaedics/sports medicine, ear/nose/throat, and minor surgery. A nurse clinic is available to provide immunizations, health screening, and basic health education. Professional counseling, psychological, and psychiatric services are available through the Student Health's Mental Health Division for a fee; the cost varies based on the level of professional services provided.

Full health care services are available beginning on the first day of Welcome Week in the fall and continuing through the last day of finals week in June. Basic services continue in the summer as well. At Student Health, fees are generally lower than those of comparable services in the community. Students not using the Undergraduate Student Health Insurance Plan (USHIP) may submit a claim to their insurance plans for reimbursement. Admission health requirement packets are mailed to new and readmitted students as their names become available to the Student Health Center. International students' packets are mailed by the Office of International Services with their initial registration forms.

All undergraduate, graduate, and medical students are required to carry adequate health insurance. Those students who have private insurance which is equal or superior to the policy provided through the University may be eligible to have the mandatory insurance fee waived. Additional information is available in the Expenses and Fees section of this *Catalogue* and from the Student Health Insurance Coordinator at (949) 824-7748.

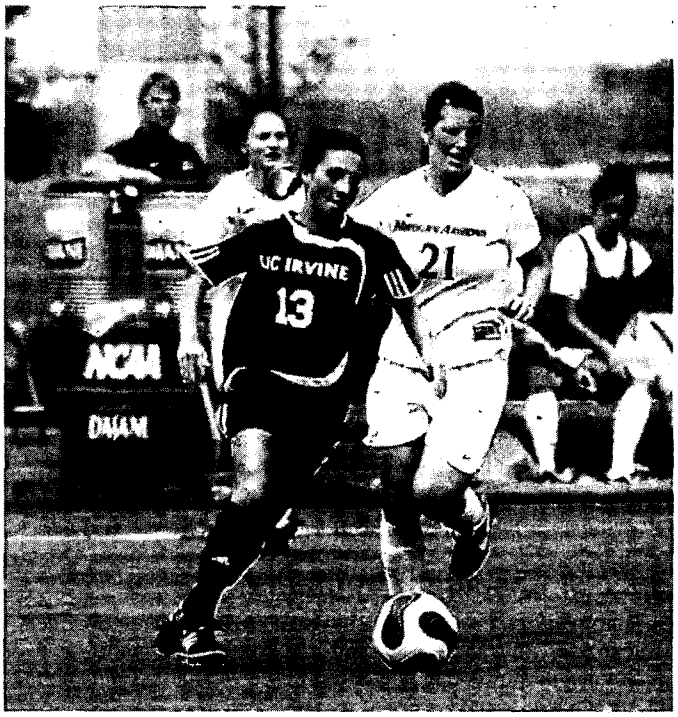
Physical Examination and Health Clearance. All new students and students returning to UCI after an absence of two or more quarters are required to file proof of tuberculosis screening, if indicated, and proof of mandatory immunizations with the Student Health Center. All students are encouraged to have a physical examination to screen for health problems. The examination may be performed by the student's own physician, but should be documented on the form provided by Student Health (downloadable from the Student Health Center Web site). The physical examination can also be performed at the Student Health Center for a fee. Students transferring from another UC campus where their medical records are on file should have the records transferred to the UCI Student Health Center.

For the most up-to-date information about the Student Health Center, visit http://www.shc.uci.edu/.

INTERCOLLEGIATE ATHLETICS

UCI's Intercollegiate Athletic Program features 18 sports, with nine men's teams and nine women's teams. Men's sports include baseball, basketball, cross country, golf, soccer, tennis, track and field, volleyball, and water polo. UCI's men's teams compete in the National Collegiate Athletic Association (NCAA) Division I, and the University is a member of the Big West Conference. UCI also competes in the Mountain Pacific Sports Federation (MPSF) in men's volleyball and water polo. The UCI women's teams also are members of NCAA Division I and the Big West Conference, competing in basketball, cross country, golf, soccer, tennis, outdoor track and field, volleyball, and women's water polo. Women's indoor track and field competes in the MPSF.

UCI has captured 26 national team championships in nine different sports since opening in 1965, with 63 individuals winning national titles and over 425 earning All-American honors. UCI has won 65 conference championships since 1977. Each spring, the University presents the Big West Scholar-Athlete Award to those student-athletes who maintained a 3.0 GPA over the previous three quarters. In the last 27 years, 3,266 UCI student-athletes have earned the award, including 184 in 2008–09.



The mission of UCI Intercollegiate Athletics is to facilitate and enrich the education and personal growth of its students through their participation in competitive NCAA Division I athletics. Intercollegiate Athletics is committed to the welfare of student-athletes and staff, and advocates an environment that promotes excellence in athletic and academic performance, sportsmanship, diversity, and gender equity. Intercollegiate Athletics also supports the University of California's mission of public service and serves to generate a unifying spirit among students, faculty, staff, and alumni that transcends communities, cultures, and generations.

The Intercollegiate Athletic offices are located in Crawford Hall; telephone (949) 824-6931.

ATHLETIC FACILITIES

On-campus facilities include the Bren Events Center, which seats 5,000 for intercollegiate basketball and volleyball. The Crawford Hall complex, in addition to housing the athletic administration offices, also includes sports medicine, strength and conditioning, and student-athlete academic support services. Crawford Court gymnasium has 760 chair-back seats for volleyball. Outdoor facilities include Anteater Stadium, a 2,500-seat facility for soccer and track; the 500-seat Anteater Tennis Stadium; Anteater Ballpark, home to the baseball program; and a five-acre multipurpose field complex.

UCI's Anteater Aquatic Complex houses the intercollegiate water polo teams. This 64-meter aquatics facility is designed with a movable bulkhead and is large enough to accommodate multiple activities simultaneously.

OFFICE OF RESEARCH

The mission of the Office of Research (OR) is to support, facilitate, and promote world-class research at the University of California, Irvine. As its primary activity, OR works with other campus units to foster an environment for research and artistic activity that facilitates the discovery and dissemination of knowledge in many forms to all levels of society.

OR provides central campus administrative support for UCI's research programs. It includes the Office of Research Administration (ORA), the Office of Technology Alliances (OTA), University Laboratory Animal Resources (ULAR), Research Development, Administrative Operations and Information Technology, and the Office of the Vice Chancellor. Each of these units contributes to the overall objective of facilitating campus research activities. More information about the Office of Research and its mission may be found at http://www.research.uci.edu.

Below is a comprehensive list of research units that report (directly or indirectly) to the Vice Chancellor for Research.

Special Research Programs

Special Research Programs (SRPs) exist at UC Irvine to provide a structure for collaborative research activities that do not fit the definition and purpose of an Organized Research Unit, a Campus Center, or a School Center.

BECKMAN LASER INSTITUTE

The Beckman Laser Institute (BLI) was established in 1982 by Dr. Arnold O. Beckman and Dr. Michael W. Berns as an interdisciplinary center for the development and application of optical technologies in biology and medicine. Since the opening in 1986, Beckman Laser Institute has grown to include 18 faculty and their 130 affiliated students, postdoctoral fellows, technical staff, and administrative support. BLI is one of five national Beckman Institutes supported by the Arnold and Mabel Beckman Foundation. BLI is dedicated to cutting-edge interdisciplinary research and the interface of physical science, engineering, and biology. Because BLI also houses a medical clinic, it is unique in its capacity for conducting translational research that moves basic technologies rapidly from "benchtop to bedside." For more information visit http://www.bli.uci.edu.

CALIFORNIA INSTITUTE FOR TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY (CALIT2)

Calit2 is a two-campus multidisciplinary research institute established by the State of California in 2000. One of four University of California Institutes for Science and Innovation, Calit2 is a partnership between academia and the business community. The Institute's unique research approach integrates academic intellectual capital across a wide range of disciplines with industry expertise. In collaboration with its sister division at UC San Diego, Calit2@UCI seeks innovative IT approaches that will benefit society and ignite economic development in the state and throughout the country.

More than 150 UCI faculty, 250 students, and 100 industry partners are actively engaged in Calit2 research areas that include the environment, transportation, emergency management, health care, education, and entertainment.

Calit2 also strives to prepare students for successful careers after graduation; the Institute's programs include SURF-IT, a summer undergraduate opportunity that immerses students in hands-on research, as well as a graduate fellows program that helps fund a select group of students doing multidisciplinary, IT-focused graduate work. For more information visit http://www.calit2.net/.

ENVIRONMENT INSTITUTE: GLOBAL CHANGE, ENERGY, AND SUSTAINABLE RESOURCES

The UCI Environment Institute: Global Change, Energy, and Sustainable Resources was created in April 2008 as a new research institute dedicated to the study of interactions between the environment and society. The Institute will enhance the already internationally recognized work in environmental and related studies now occurring across UC Irvine, beginning with support of on-campus research projects and recruitment of new faculty. The overall goals are to strengthen and link academic programs in environmental studies across UCI's schools and departments, develop a coherent image of the breadth and quality of ongoing research in the environment and related fields, and enhance the rise of UCI as a leader in addressing the challenges of global change, energy, and sustainable resources. The Institute will also encourage organizational efforts directed at improving sustainable practices on the UCI campus. More information is available at http://environment.uci.edu/.

INSTITUTE FOR CLINICAL AND TRANSLATIONAL SCIENCE

The Institute for Clinical and Translational Science (ICTS) in the Office of Research is a uniquely transformative, novel, and integrative academic home for clinical and translational science with the resources to train and advance a cadre of well-trained multi- and interdisciplinary investigators and research teams. The Institute facilitates access to innovative research tools and information technologies to promote the application of new knowledge and techniques to patient care. ICTS assists basic, translational, and clinical investigators; community clinicians, clinical practices, networks, professional societies, and industry to develop new professional interactions, programs, and research projects. ICTS fosters a new discipline of clinical and translational science that is much broader and deeper than their separate components. The faculty members associated with ICTS are instrumental in supporting students in related advanced degree programs via their grants and other sources of financial support. ICTS consists of several units: Pilot and Collaborative Translational and Clinical Studies; Translational Technologies and Resources; Development of Novel Clinical and Translational Methodologies; Biomedical Informatics (including the Center for Medical Informatics); Design, Biostatistics, and Clinical Research Ethics; Regulatory Knowledge and Support; Participant and Clinical Interactions Resources; Community Engagement; and Research Education, Training, and Career Development. More information is available at http://www.icts.uci.edu/.

SUE AND BILL GROSS STEM CELL RESEARCH CENTER

The vision of UCI's Sue and Bill Gross Stem Cell Research Center (SCRC) is to progress the understanding and therapeutic potential of stem cell science toward the improvement and relief of human disease. Development of SCRC is built upon the campus's long-standing strengths in neuroscience, developmental biology, and pharmacology, and benefits from faculty collaborations with other UCI Organized Research Units and Centers. In July 2010, Sue and Bill Gross Hall: A CIRM Institute will complete construction, and will be one of twelve buildings in the state funded by taxpayer support through the California Institute for Regenerative Medicine. "Gross Hall" will be home to UCI's world-class faculty, clinicians, and training fellows in stem cell research, and will include a "federal-free" core lab facility outfitted with state-of the art equipment critical to human embryonic stem cell research. For more information visit http://stemcell.uci.edu/.

THESAURUS LINGUAE GRAECAE®

The Thesaurus Linguae Graecae (TLG)® is a research project that was established at UCI in 1972, thanks to a gift by UCI alumna Marianne McDonald. Its goals are to create a comprehensive digital library of Greek literature from antiquity to the present era; to conduct literary research using collected texts; and to apply technological innovation in these endeavors. The TLG® corpus currently contains more than 105 million words of Greek text from Homer (8 c. B.C) to the fall of Byzantium in A.D. 1453 and beyond.

TLG® research activities combine the traditional concerns and methodologies of philological and literary study with the most advanced features of computer technology. Included among current research foci are the identification of ancient Greek literary and documentary materials from various literary-historical periods; the conversion of these materials into digital form using modern methods of text encoding; the enhancement of automated text-correction routines; and the formulation of criteria for the lexical analysis and categorization of the texts in the corpus. The full corpus is available to more than 2,000 subscribing institutions and thousands of individuals in 58 countries worldwide.

TLG®'s library holdings enhance those of the UCI Langson Library, and TLG® conferences and scholarly visits afford faculty and students contact with eminent scholars in related fields. The Thesaurus Linguae Graecae® has made UCI a major source of Classics research activity. Visit http://www.tlg.uci.edu/ for more information.

UNIVERSITY OF CALIFORNIA HUMANITIES RESEARCH INSTITUTE

The University of California Humanities Research Institute (UCHRI) is a multicampus research program of the University of California, serving all ten campuses in the UC system. Founded in 1987 and headquartered at the UC Irvine campus, the Institute promotes collaborative work representing different fields and institutions both within and beyond the University of California. UCHRI addresses topics in traditional humanities disciplines, as well as in new areas intersecting with social and natural sciences, technology, art, medicine, and the professions. Stressing interdisciplinary collaborative research, UCHRI bridges gaps between disciplines across the humanities and human sciences and seeks to overcome the intellectual and institutional barriers that can separate the humanities from other fields.

The Institute is also an integral part of the newly funded system-wide UC Humanities Networking Initiative. In this role, UCHRI provides support for the Society of Fellows in the Humanities and the Consortium of Humanities Centers. UCHRI is a founding member of HASTAC, the Humanities, Arts, Science and Technology Advanced Collaboratory, a consortium of humanists, artists, social scientists, scientists, and engineers committed to new forms of collaboration across communities and disciplines fostered by creative uses of technology.

UCHRI also administers the UC Consortium in California Studies; the Andrew Vincent White and Florence Wales White Graduate Student Scholarship supporting dissertation research in the humanities or theoretical social sciences and medicine; the UC-University Utrecht faculty collaborative research grants; and the annual summer Seminar in Experimental Critical Theory.

UCHRI, in partnership with Duke University, administers the Digital Media and Learning Competition, a $2-million annual program funded by the MacArthur Foundation to award emerging leaders who use digital technologies to envision the future of learning.

For additional information, contact the University of California Humanities Research Institute, 4000 Humanities Gateway, Irvine, CA 92697-3350; (949) 824-8180; uchri@uci.edu; http://www.uchri.org.

Organized Research Units

Organized Research Units (ORUs) normally consist of an interdisciplinary group of faculty, students, and other researchers engaged in a continuing program of multidisciplinary or interdisciplinary research, supported by both University and extramural funding. The work of some ORUs is directed toward the solution of complex contemporary problems, while others conduct basic research essential to the understanding of natural or social phenomena or of humanistic ideas and expressions. The following ORUs have been established on the Irvine campus.

AIRUCI

AirUCI is a research team based at UCI focused on probing a new type of chemistry that occurs in the atmosphere at the interface between air and water. Funded by the National Science Foundation (Divisions of Chemistry and Atmospheric Sciences), AirUCI began in August 2002 as a Collaborative Research in Chemistry (CRC) group and was accepted as an ORU in July 2008.

Chemical reactions that play key roles in the formation of smog, acid rain, and in global climate change are known to occur between gases, as well as inside liquid droplets that are present in the atmosphere in the form of airborne particles, fogs, and clouds. Only recently has it been apparent that chemical reactions also occur right at the interface between air and these atmospheric droplets. Both the speed with which these interface reactions occur and the manner in which they take place may be quite different from reactions in either the gas or liquid. AirUCI's scientific team combines theory, experiments, and computer modeling of air quality to provide new insights into how this chemistry at interfaces impacts the atmosphere. More information is available at http://www.chem.uci.edu/airuci/.

CANCER RESEARCH INSTITUTE

The UCI Cancer Research Institute (CRI) is an Organized Research Unit dedicated to basic cancer research. The CRI has 55 faculty affiliates from departments in the Schools of Biological Sciences, Engineering, Medicine, and Physical Sciences. The CRI supports faculty research, organizes cancer-related training, and functions as the basic sciences arm of the UCI Chao Family Comprehensive Cancer Center. The CRI offices are located in Sprague Hall on the UCI main campus; Sprague Hall is a facility dedicated to research in cancer and genetics. Additional information is available online at http://www.cri.bio.uci.edu/.

CENTER FOR EMBEDDED COMPUTER SYSTEMS

The Center for Embedded Computer Systems, established as an informal center in 1998, was recognized as an ORU in 2001. The Center provides the organizational and administrative structure for researchers at UCI, UCR, and UCSD to conduct leading-edge interdisciplinary research in embedded systems, develop innovative design methodologies, and promote technology and knowledge transfer for the benefit of the individual and society. The research program focuses on three application domains: (1) Communications, including infotainment, information appliances, multimedia, personal imaging, and wireless; (2) Automotive, including collision avoidance, control/sensors, entertainment, and emergency services; and (3) Medical, including diagnosis, drug delivery, imaging, implanted devices, and monitoring. Additional information is available on the CECS Web site at http://www.cecs.uci.edu/.

CENTER FOR RESEARCH ON IMMIGRATION, POPULATION, AND PUBLIC POLICY

The purpose of the UCI Center for Research on Immigration, Population, and Public Policy is to foster and conduct basic and policy-relevant research on international migration and other population processes, with a main focus on U.S. immigration. In order to

encourage multi-investigator, multi-disciplinary, and interdisciplinary research projects, the Center organizes informal discussions of ideas for future research projects, "brainstorming" sessions about research funding opportunities, "brown-bag" presentations of research findings, and workshops and conferences. Much of the Center's research focuses on the multi-generational incorporation experiences of immigrant groups in the United States, especially those occurring in diverse contexts such as Southern California. More information is available at http://www.cri.uci.edu.

CENTER FOR THE NEUROBIOLOGY OF LEARNING AND MEMORY

The CNLM was founded by faculty at Irvine including James L. McGaugh and Norman M. Weinberger. The 39 current Fellows include faculty from several departments at UCI, as well as from UC San Diego, UCLA, USC, Scripps, and Caltech. These faculty neuroscientists, together with professional and postgraduate researchers, graduate and undergraduate students, and visiting scientists from all over the world, form the research teams of the CNLM.

Center researchers have backgrounds and credentials in a variety of research disciplines (psychology, chemistry, anatomy, pharmacology, molecular biology, for example) that influence their approaches to the study of learning and memory. Using state-of-the-art neuroscience techniques, they investigate the formation, maintenance, and retrieval of memory at several levels of analysis, from studies of molecular and cellular processes in the brain to studies of memory in animal and human subjects.

In its 25-year history, the CNLM has educated a large number of graduate students and postdoctoral researchers, as well as many hundreds of undergraduates. Their research education prepares them to make their own contributions to this field of knowledge and to teach future generations of scientists. Former graduate students and postdoctoral researchers in the CNLM hold positions of leadership in neuroscience in many parts of the world. For more information visit http://www.cnlm.uci.edu/.

CENTER FOR RESEARCH ON INFORMATION TECHNOLOGY AND ORGANIZATIONS

The Center for Research on Information Technology and Organizations (CRITO) is a multidisciplinary Organized Research Unit that conducts theoretical and empirical research into the social and economic impacts of information technology (IT) in organizations and society. CRITO researchers focus on the management of information systems, the IT-enabled enterprise, community-based technologies, and IT industry studies. They have been consultants to international corporations and government agencies, have published over a dozen books, and have won numerous major awards for excellence in their fields. CRITO conducts both academic and applied research.

CRITO's major activities include fostering academic research, student development, securing funding for research, and corporate outreach. CRITO members facilitate the conduct of research by creating a multi-disciplinary community of scholars from UCI and other universities. They advise faculty on securing extramural funding, provide grant management services, provide statistical and data management support, and offer work spaces for funded projects. They develop graduate students by offering them research opportunities on research projects. They work closely with companies who provide research direction and funding, act as field study sites, and validate results. They also host conferences and research seminars to present research findings. For more information visit http://www.crito.uci.edu.

CENTER FOR THE STUDY OF DEMOCRACY

The Center for the Study of Democracy (CSD) fosters academic research and education to provide a better understanding of the democratic process, and the steps that may strengthen democracy at home and abroad. The faculty and students of the Center study both democratizing nations and the expansion of the democratic process in the United States and other Western democracies. The Center hosts research conferences, sponsors faculty research, publishes a research paper series, and facilitates research and teaching on democratic themes.

In 1995 the National Science Foundation selected UCI to establish a Graduate Research Traineeship on Democratization and Democratic Politics. University, foundation, and philanthropic support has continued this graduate education through the Democracy Fellows program. The formal course work and faculty mentorship of the training program draw upon faculty of the Center and build upon its present research and educational activities. In addition, graduate fellows in the training program participate in the research activities of the Center. Visit http://www.democ.uci.edu/ for more information.

CENTER FOR VIRUS RESEARCH

The Center for Virus Research (CVR) seeks to foster interdisciplinary scholarship, training, and research among virologists and other faculty. Research on viruses provides a biological and technological foundation from which much has been discovered concerning the basic molecular processes of organisms. Viruses supply some of the most useful experimental models for disease, cancer, immunity, and genetic systems of gene control. In addition, viral-based technology is being vigorously pursued and developed in the context of gene therapy and is teaching us much about the control of cellular processes. With the growing worldwide threat of emerging viral diseases, interest in virus research at all levels has intensified and has taken on a new global perspective. Previously separate disciplines such as molecular biology, pathogenesis, evolutionary biology, neurology, and radiological sciences can now be readily linked by virus research.

The CVR is also committed to advanced post-graduate training. In addition to shared facilities and the seminar and symposia series, the CVR oversees two training grants. Since graduate training in virology encompasses six departments in three schools, the CVR has also become the focus and administrative point for the organization of graduate virology courses and the virology track of the interdisciplinary graduate program in Cellular and Molecular Biosciences (CMB). Visit http://cvr.bio.uci.edu/ for more information.

CRITICAL THEORY INSTITUTE

The Critical Theory Institute (CTI) provides a locus for the conduct and support of collaborative, interdisciplinary research that focuses on the theoretical underpinnings of such fields as history, literature, philosophy, art, anthropology, politics, and cultural studies. CTI's principal function is to create a forum for debate among competing movements in contemporary critical theory. CTI's work encompasses not only the application of theory to data but also a self-reflexive investigation of theoretical presuppositions in order to produce alternative theoretical models, methodologies, and research strategies. CTI investigates problems by defining research projects in critical theory that are addressed for three- to four-year periods through organized discussions of pertinent theoretical work and specific events such as the Irvine Lectures in Critical Theory series.

CTI additionally hosts the annual Wellek Library Lectures, featuring major figures who are shaping the direction of contemporary critical theory. CTI publishes these lectures in its Wellek Library Lecture Series. Other activities sponsored by CTI include workshops, conferences, reading and discussion groups, one-time lectures by international scholars, and co-sponsorship of a number of other theory-related events.

In recent years, CTI has established broad connections to distinguished institutions and scholars around the world and has been

planning collaborative international projects on a regular basis. Further information on CTI, including a calendar of events, is available at http://www.humanities.uci.edu/critical.

DEVELOPMENTAL BIOLOGY CENTER

The goal of the research conducted in UCI's Developmental Biology Center (DBC) is to understand the normal processes of development and homeostasis. Development begins with embryogenesis and culminates with formation of an adult animal. Homeostasis refers to the process whereby tissues, such as skin, are continuously rebuilt in adult animals. Abnormal development during embryogenesis is a common cause of birth defects, while abnormal homeostasis is commonly associated with cancer or degenerative disease.

The faculty in DBC use a wide range of experimental approaches to understand development. The current research areas fall into several themes. These include cancer biology, cell biology, cellular degeneration and regeneration, cellular signaling, growth, patterning and differentiation, and environmental impact. Advances in research in these areas provide valuable basic information about how development and homeostasis are controlled. This information can then be used to develop tools for diagnosis and treatment of human disease associated with abnormalities in either process.

DBC facilitates this research by providing access to state-of-the-art instrumentation and by fostering events that spur the development of interdisciplinary research. The Center currently provides confocal microscopy, image analysis, flow cytometry and cell sorting, surface plasmon resonance molecular interaction equipment, and robotics. It also sponsors symposia, seminars, and other gatherings to discuss both science itself and implications of the science. Additional information is available at http://dbc.bio.uci.edu/.

GENETIC EPIDEMIOLOGY RESEARCH INSTITUTE

The Genetic Epidemiology Research Institute (GERI) was established in 2004 and brings together scientists from epidemiology, developmental and cell biology, molecular biology and biochemistry, evolutionary biology, genetics, immunology, statistics, bioinformatics, and environmental and behavioral sciences to answer complex questions that can best be explored though an interdisciplinary approach. GERI (1) combines epidemiologic approaches with basic science methods to test hypotheses related to genetic bases of the etiology and progression of disease; (2) facilitates research to apply newly discovered molecular biological processes and genetic characteristics in health and disease in well-characterized human populations; (3) provides epidemiological information that will influence the understanding of the basic processes leading to disease, such as environmental and lifestyle factors, and to test their effect as modifiers of genetic predisposition, thus providing the foundation for disease prevention; and (4) uses advances in information sciences and communication technology to allow for efficient data mining and pattern recognition for genetic epidemiological data. Visit http://www.geri.uci.edu for information.

HEALTH POLICY RESEARCH INSTITUTE

The Health Policy Research Institute (HPRI) is an interdisciplinary faculty research organization dedicated to improving the quality of care and reducing the disparities in health care. Through research, its faculty and associates translate scientific findings into practice by uniting clinical sciences with the social and behavioral science fields of economics, psychology, anthropology, sociology, and business. This unique platform provides the basis for HPRI's research results to directly effect health policy and the health of the local community and the public.

HPRI is committed to building the center into a nationally recognized focal point for health care research. HPRI has four principal functions: (1) to produce high-level health policy research in the areas of quality of chronic disease care (i.e., diabetes, cancer, nursing home care) and reduce health disparities and improve quality of care for ethnic minorities; (2) to disseminate research findings to UCI's faculty and students through seminar series, meetings, and publications; (3) to serve as the research center for UCI graduate and undergraduate students who have health interests; and (4) to support improvements in patient health and safety and organizational improvements in the UCI health care system.

HPRI's achievement of these goals begins with its faculty—an interdisciplinary group of national leaders representing health services research, health economics, clinical epidemiology, psychometrics, and behavioral sciences in medicine. The current research led by HPRI's members and its campuswide collaborators enhance UCI as one of the best research universities in the country.

INSTITUTE FOR GENOMICS AND BIOINFORMATICS

The Institute for Genomics and Bioinformatics (IGB) provides an organizational structure for interdisciplinary research and training in genomics, proteomics, bioinformatics, chemoinformatics, and computational biology—emerging scientific disciplines that are revolutionizing biology, medicine, and society. IGB computational and life scientists are working together to pioneer fundamental processes for reverse engineering gene and protein networks to understand complex biological systems. Through these interdisciplinary collaborations, IGB scientists are creating new theoretical, algorithmic, and software advances in storing, retrieving, networking, processing, modeling, analyzing, navigating, and visualizing biological information. In turn, their computational and computer science accomplishments are providing methods, predictions, and new hypotheses that are driving biological research in previously unanticipated ways. This scientific cross-fertilization is enriching both fields and will continue to do so in the coming decades. More complete descriptions of the Institute's research and training programs are available at http://www.igb.uci.edu/.

INSTITUTE FOR IMMUNOLOGY

The UCI Institute for Immunology currently comprises 33 faculty members from the School of Biological Sciences and the School of Medicine, whose research and instructional efforts are in immunology. It integrates the immunological research and educational activities of multiple departments, including Molecular Biology and Biochemistry, Microbiology and Molecular Genetics, Physiology and Biophysics, Pathology, Medicine, and Neurology. The activities of the UCI Institute for Immunology extend to synergize with allied areas of research including biomedical engineering, public health, and physical rehabilitation. The major mandate of the Institute for Immunology is to consolidate and further the research and training/instructional efforts in immunology at UCI, thereby promoting the rapid development of world-class research and outstanding graduate and medical training programs in immunology. Visit http://www.immunology.uci.edu/ for more information.

INSTITUTE FOR MATHEMATICAL BEHAVIORAL SCIENCES

The Institute for Mathematical Behavioral Sciences fosters research in the application of mathematical models and methods to describe and to better understand human behavior, both individual and social. Mimicking the successful interaction between mathematics and the physical sciences, a goal of the Institute is to generate successful interactions between mathematics and the behavioral and social sciences. The Institute sponsors specialized seminars and colloquia, a visiting scholars program, workshops, and focused research groups of faculty, students, and visitors, and it maintains a Technical Report Series. Participants include faculty from the

Departments of Anthropology, Cognitive Sciences, Economics, Logic and Philosophy of Science, Political Science, and Sociology in the School of Social Sciences; the Department of Mathematics in the School of Physical Sciences; the Department of Electrical Engineering and Computer Science in The Henry Samueli School of Engineering; the Donald Bren School of Information and Computer Sciences; and The Paul Merage School of Business. Additional information is available at http://www.imbs.uci.edu.

INSTITUTE FOR MEMORY IMPAIRMENTS AND NEUROLOGICAL DISORDERS (UCI MIND)

The Institute is an Organized Research Unit dedicated to investigating the causes of Alzheimer's disease and related dementias and to improving the quality of life and promoting successful aging. The vision for The Institute for Memory Impairments and Neurological Disorders is to develop approaches for lessening the impact of memory-related disorders. Tackling these complex issues requires a multi-disciplinary approach, which is reflected in the diversity of the Institute's faculty, who have primary appointments in the Schools of Biological Sciences, Information and Computer Sciences, Engineering, Medicine, and Social Sciences, and the Program in Nursing Science.

The Institute is one of 29 Alzheimer's Disease Research Centers (ADRC) supported by the National Institute for Aging, a branch of the National Institutes of Health, and is one of 10 Alzheimer's Disease clinical centers (ADC) funded by the California Department of Public Health. The mission of the ADC is to diagnose the needs of Orange County. Visit http://www.mind.uci.edu/ for more information.

INSTITUTE FOR SOFTWARE RESEARCH

The mission of the Institute for Software Research (ISR) is to advance software and information technology through research partnerships. ISR is dedicated to fostering innovative basic and applied research in software and information technologies. To achieve this goal, ISR works with established companies, start-ups, government agencies, and standards bodies to develop and transition technologies to widespread and practical application. The Institute also focuses on educating the next generation of software researchers and practitioners in advanced software technologies. It supports the public service mission of the University of California in developing the economic basis of the State of California.

Technical emphases of the Institute include software architecture, decentralized development and applications, event-based systems, open-source software development, game culture and technology, software processes, computer-supported cooperative work, human-computer interaction, user interface software, information visualization, privacy and security, ubiquitous computing, software understanding, requirements engineering, analysis and testing, extensible systems, configuration management, configurable distributed systems, Internet protocols and standards, and software engineering education.

Faculty members are drawn from throughout the University of California. Graduate research assistants, professional research staff, and visiting researchers complete the Institute's research body.

ISR supports research projects, sponsors professional meetings, and develops technology. To further its research agenda, the Institute sponsors a distinguished speaker series, technical roundtables, workshops, symposia, and special events. Effective partnerships with industry are essential for ISR to achieve its goals of technology development and transition. Corporate and institutional sponsorships support ISR's research, activities, and professional meetings. Additional information is available at http://www.isr.uci.edu/.

INSTITUTE FOR SURFACE AND INTERFACE SCIENCE

The detailed understanding, control, and application of phenomena that occur at surfaces and interfaces require expertise that cuts across the traditional boundaries of science and engineering. The increased activity in the nanosciences provides an excellent example. As structure sizes are reduced into the nanometer regime, the properties of surfaces and interfaces become dramatically more important as the surface-to-volume ratio increases. In this burgeoning new field, new understanding of surface chemistry becomes ever more important to the controlled synthesis of structures (e.g., wires, tubes, particles), new understanding of physics of surfaces and interfaces is required to understand and control the properties, and new engineering approaches are required to convert such structures into a broad range of new devices. The Institute for Surface and Interface Science (ISIS) at UCI exists to stimulate and foster scientific interactions between member faculty who share a common interest in molecular and atomistic-scale understanding and control of phenomena that occur on or at the interfaces between one or more phases of matter. A fundamental understanding of surfaces and interfaces provides a foundation for control of a myriad of technologically important phenomena including: lubrication, catalysis, corrosion, chemical sensing, semiconductor-based electronics, power generation in batteries, fuel cells, and solar cells. ISIS faculty have a diversity of training, experience, and research focuses related to surfaces and interfaces; interactions between members can be highly synergistic, and these interactions make possible a "vertically integrated" treatment of complex problems encompassing theory, fundamental experiments, engineering, and application. Visit http://www.physics.uci.edu/~isis/ for more information.

INSTITUTE OF GEOPHYSICS AND PLANETARY PHYSICS

The Irvine branch of the Institute of Geophysics and Planetary Physics (IGPP) was established in 2001. IGPP is a University of California Multicampus Research Unit (MRU) established in 1946, with existing branches at UCLA, UCSD, UCR, UCSC, and the Los Alamos and Livermore National Laboratories. The Institute's mission is to promote and coordinate basic research on the understanding of the origin, structure, and evolution of the Earth, the Solar System, and the Universe, and on the prediction of future changes, as they affect human life. Research at the UCI IGPP branch addresses fundamental questions of global environmental change affecting the coupled system of atmosphere, ocean, and land, and occurring on the time scale of a human life. IGPP promotes research at UCI by (1) supporting major research initiatives and facilities jointly with the School of Physical Sciences and the Department of Earth System Science; (2) supporting research by graduate students; and (3) supporting visiting scientists, seminars, and workshops that promote collaborative research. Facilities that receive IGPP support include the W. M. Keck Carbon Cycle Accelerator Mass Spectrometry Facility, the Stable Isotope in Atmospheric Trace Gas Facility, the Earth System Modeling Facility, and the Earth System Science (ESS) Analytical Mass Spectronomy Facility. See http://www.ess.uci.edu/~CGECR/ for more information.

INSTITUTE OF TRANSPORTATION STUDIES

The Institute of Transportation Studies (ITS), a University of California Organized Research Unit with branches at Irvine, Davis, and Berkeley, was established to foster research, education, and training in the field of transportation.

ITS research at the University of California, Irvine (UCI) involves faculty and students from The Henry Samueli School of Engineering, the School of Social Sciences, the School of Social Ecology, The Paul Merage School of Business, and the Bren School of Information and Computer Sciences. The Institute also hosts

visiting scholars from the U.S. and abroad to facilitate cooperative research and information exchange, and sponsors conferences and colloquia to disseminate research results. ITS has a long and rich history of providing both direct and indirect support to the UCI transportation graduate programs. It provides office and research space to virtually all of the students enrolled in UCI's four graduate transportation programs—the interdisciplinary Program in Transportation Science; the graduate concentration in Transportation Economics; the Transportation Planning option in the Department of Planning, Policy, and Design; and the Transportation Systems Engineering graduate focus in the Department of Civil and Environmental Engineering. ITS provides extensive computing resources to all of these students, together with state-of-the art simulation and laboratory facilities. ITS subscribes to the major transportation research journals and offers a variety of computer-based information retrieval services. More information about ITS can be found at http://www.its.uci.edu/.

MOLECULAR AND MITOCHONDRIAL MEDICINE AND GENETICS (MAMMAG)

The mission of the ORU in Molecular and Mitochondrial Medicine and Genetics (MAMMAG) is to bring together basic scientists, clinical investigators, and patients within the University of California system to determine the causes and to generate cures for the common metabolic and degenerative diseases, cancer, and aging. To achieve this ambitious goal, MAMMAG is applying a new biomedical paradigm which argues that most common diseases are the result of energy deficiency, rather than structural defects. Energy defects are primarily due to defects in the mitochondrion, which provides most of the cell's and body's energy. This paradigm predicts that effective preventative therapeutics must emphasize the stabilization of mitochondrial function and that ameliorative therapies must focus on the replacement of cells lost due to cellular energy failure through use of stem cell technologies.

MAMMAG maintains both laboratory and clinical programs. The laboratory is dedicated to determining the genetic and epigenomic bases of energetic disease and to developing the appropriate therapeutics. The clinical program combines patient care, diagnostics, and clinical trials. MAMMAG is thus addressing many pressing clinical problems, the clarification and treatment of which will have a profound effect on the health and well-being of people around the world. More information can be found at http://mammag.uci.edu/.

REEVE-IRVINE RESEARCH CENTER

The Reeve-Irvine Research Center (RIRC) is devoted to studying cellular and molecular mechanisms that underlie the response of the nervous system to injury, exploring innate and therapeutic regenerative capabilities, and developing treatments for spinal cord injury. RIRC has four principal investigators whose laboratories are located in the Center and whose research focuses on the use of rodent models (rats and mice) and related cell culture systems to study how the spinal cord responds to injury. A major focus is on enhancing the regeneration of damaged nerve fibers (axon regeneration) and on the use of stem cells for cellular replacement therapy. There are also 23 associate investigators whose laboratories are located elsewhere in the University who study the response to injury, neural repair, regeneration, and stem cell biology. Some of the associate investigators also carry out human-subjects research focusing on advanced functional imaging techniques, novel rehabilitative strategies including the use of robotics, advanced prosthetics, and associated devices that are capable of recording signals from the nervous system.

There are a number of potential targets for therapy for spinal cord injury, and RIRC scientists address many of these. Importantly, some of the most promising strategies, and the ones that are closest to clinical application, involve interventions during the acute post-injury period (days to weeks after the injury). However promising these strategies are, the Center is committed to the long-term goal of developing treatments to promote nerve regeneration and repair for individuals with chronic injuries, and this is reflected in the research programs of each investigator. More information is available at http://www.reeve.uci.edu/.

Campus Centers

A Campus Center provides a group of researchers with use of the "Center" title and a structure for its collaborative activities. The rationale for establishing a Campus Center may include attracting greater recognition and extramural support for a research program at UCI and/or providing an infrastructure that promotes synergistic interactions between a group of researchers within a school or across schools. Directors of campus centers typically report to the Dean of their respective schools. More information about the following Campus Centers may be found by clicking on the "Research Centers and Institutes" link at http://www.research.uci.edu/.

Center for Asian Studies
Center for Biomembrane Systems
Center for Demographic and Social Analysis
Center for Diabetes Research and Treatment
Center for Ethnography
Center for Global Peace and Conflict Studies
Center for Hearing Research
Center for Learning through the Arts and Technology
Center for Organizational Research
Center for Pervasive Communications and Computing
Center for Unconventional Security Affairs
Center in Law, Society and Culture
Center on Inequality and Social Justice
Dr. Samuel M. Jordan Center for Persian Studies and Culture
Epilepsy Research Center
International Center for Writing and Translation
Newkirk Center for Science and Society
Tu and Yuen Center for Functional Onco-Imaging
UCI Interdisciplinary Center for the Scientific Study of Ethics and Morality
Urban Water Research Center

Other Research Centers and Institutes at UCI

"Other" research units do not fit the definition of an Organized Research Unit (ORU), Special Research Program (SRP), or Campus Center, but are similarly interdisciplinary. These units may have been designated as Centers by a sponsoring agency such as the National Science Foundation (NSF) or the National Institutes of Health (NIH), or they may be part of an intercampus-consortium, such as Centers funded by the UC Multicampus Research Programs and Initiatives (MRPI) competition. More information about the following centers may be found by clicking on the "Research Centers and Institutes" link at http://www.research.uci.edu.

California Center for Antiviral Drug Discovery
California Institute for Hazards Research
Center for Complex Biological Systems (CCBS)
Chao Family Comprehensive Cancer Center
Chemistry at the Space-Time Limit (CaSTL)
Digital Media and Learning Research Hub
Emerging Infectious Diseases
Imaging Genetics
Institute for Complex Adaptive Matter (ICAM)
National Fuel Cell Research Center
Network for Experimental Research on Evolution (NERE)
Research Imaging Center (RIC)
Southern California Center for Galaxy Evolution
Susan Samueli Center for Integrative Medicine
Sustainable Transport: Technology, Mobility, Infrastructure
Sustainable Transportation Consortium
UC Center for Hydrologic Modeling
UC-Cuba Academic Initiative
UC Humanities Network: A New Humanities Initiative

GRADUATE DIVISION

Frances M. Leslie, **Dean of the Graduate Division**

With the exception of programs conducted by the School of Medicine for the training of physicians, and the J.D. program in the School of Law, the Dean of the Graduate Division administers graduate education in accordance with academic policies established by the University of California, the Irvine Division of the Academic Senate, and the UCI Graduate Council, a standing committee of the Irvine Division of the Academic Senate. Graduate education includes those students engaged in the pursuit of a master's degree, a doctoral degree, or a teaching credential, as well as individuals engaged in postdoctoral training at UCI. There is no separate graduate faculty at UCI; all graduate work is supervised by academic units and faculty members who have concurrent responsibility for undergraduate education.

Information about graduate education at UCI is published here in the *UCI General Catalogue,* on the Graduate Division Web site, and in individual graduate program publications. The staff of the Graduate Division and departmental academic advisors are prepared to answer questions about admission, academic policies and procedures, graduate programs and degrees, financial assistance, student services, and other matters of concern to applicants or graduate students. The Graduate Division is located in 120 Aldrich Hall; (949) 824-4611; http://www.grad.uci.edu/.

The University of California believes that a diverse student and faculty population is integral to the advancement of academic excellence and is critical to promoting the lively intellectual exchange and the variety of ideas and perspectives that are essential to advanced scholarly research and debate. The University is committed to expand student outreach, recruitment, and retention efforts. Through the Graduate Division's diversity programs, steps are taken to increase the participation of diverse groups of U.S. citizens and permanent residents who have been educationally or socioeconomically disadvantaged.

It is the goal of UCI's Graduate Division to award fellowships to many admitted students based upon merit or financial need. In addition, diversity fellowships for new and continuing Ph.D. and M.F.A. students are based on demonstrated scholastic achievement, full-time status, U.S. citizenship or permanent residency, and socioeconomic and educational limitations. Each academic department identifies those students whose scholarship, background, and life experiences can best enhance the level of diversity within a department or discipline.

Admission to Graduate Standing

Applicants for admission to graduate study at UCI must apply for acceptance into a specific graduate program to work toward a specific advanced degree. A general requirement for admission is that the applicant hold the degree of Bachelor of Arts, Letters, Philosophy, or Science (or an acceptable equivalent) from an accredited academic institution with degree standards equivalent to those of the University of California. A minimum undergraduate grade point average of at least B (3.0 on a 4.0 scale) is required.

Each applicant's file is comprehensively evaluated by the faculty admissions committee of the applicant's specific graduate program on the basis of such factors as academic subject preparation, scholarship, letters of recommendation, test scores, and examples of previous work. One critical evaluative question is whether the applicant's academic objectives can reasonably be satisfied by a particular graduate program on this campus. Please note that the University of California does not have the capacity to accommodate/admit all applicants who meet the minimum admission requirements.

Application Procedures

HOW TO APPLY

Prospective students should apply online using the *Application for Graduate Study* available at http://www.grad.uci.edu/. Detailed instructions are included in the electronic application. For additional information, send e-mail to ogs@uci.edu or call (949) 824-4611.

The mandatory application fee is $70 ($90 for international students) and is not refundable under any circumstances. (Please note, however, that the application fee for M.B.A. programs offered by The Paul Merage School of Business is $150.) Payment instructions are provided in the electronic application as well as on the Graduate Division Web site. Diversity program and/or financial-need-based application fee waivers may be available for a few domestic (U.S. Citizen or U.S. Permanent Resident) applicants.

WHEN TO APPLY

For all graduate programs, applications should be completed and submitted by January 15 to receive full consideration for any financial support. Some academic units may accept applications for winter or spring quarter admission for which deadlines are generally October 15 and January 15, respectively. In order to process applications in time for the applicant to receive full consideration, letters of recommendation, official transcripts, and official test scores must be received before the published deadlines. Some schools and departments have earlier or later deadlines for filing the application. Applicants should consult their prospective department or school for more detailed information. Contact information for the schools and departments may be obtained by visiting their individual Web sites available at http://www.uci.edu/academics.php, or via the list of department and school contacts on the Graduate Division Web site at http://www.grad.uci.edu/contact/applicant_prgm_dir.htm.

Required Supporting Documents

LETTERS OF RECOMMENDATION

Applicants should arrange to have three letters of recommendation forwarded directly to their prospective academic department or program. Recommendation forms are available for downloading at http://www.grad.uci.edu/forms/. Only one set of three recommendation letters needs to be submitted in support of an application for admission and fellowship or assistantship consideration. It is important that letters of recommendation be completed primarily by professors or instructors in disciplines related to the proposed course of study who are in a position to analyze an applicant's abilities and academic promise.

GRADUATE RECORD EXAMINATION (GRE) SCORES

All applicants are required to take the Graduate Record Examination (GRE) General Test, with the following exception: The Paul Merage School of Business requires that M.B.A. applicants take the Graduate Management Admission Test (GMAT). Executive M.B.A. and Health Care Executive M.B.A. applicants are exempt from the test requirement. Several programs also require, or strongly recommend, that an applicant report the score of a GRE Subject Test. There is no minimum GRE score. Applicants should register for either the October or December test dates to ensure the

timely receipt of their score results for admission consideration. The GRE is administered by Educational Testing Services (ETS); http://www.ets.org. GRE scores that are more than five years old are not acceptable.

DOMESTIC ACADEMIC RECORDS

Domestic applicants should request that official transcripts be forwarded *directly* to their prospective academic department or program. Two complete sets of official records covering all post-secondary academic work attempted, regardless of length of attendance, are required. Two official sets of transcripts must also be submitted by applicants who attended or graduated from any University of California campus, including UC Irvine. Applicants with academic work in progress must expect to complete their undergraduate degree programs before the intended date of enrollment at UCI and must submit evidence of degree conferral before officially enrolling.

FOREIGN ACADEMIC RECORDS

Official records from overseas institutions should be sent *directly* to the prospective academic department or program at UCI. Records of academic study from foreign institutions must be official, bearing the original signature of the registrar and the seal of the issuing institution. Applicants should not send the original of an academic record which cannot be replaced; they should obtain instead properly certified copies. Unless academic records and diplomas are issued in English by the institution, the official records in their original language must be submitted with an authorized, complete, and exact English translation. Foreign academic records must be in duplicate and include all subjects or courses taken on a yearly basis, together with the units of credit or time allotted to each subject each term or year and the marks or ratings in each subject or examination passed. In all cases the institutional grading scale or other standard of evaluation, including maximal passing and failing marks and definition of grades between them, should appear on official records or as an official attachment. Official evidence of degree conferral must also be supplied, together with evidence of rank in class if available.

DEMONSTRATION OF ENGLISH LANGUAGE PROFICIENCY FOR ADMISSION

Applicants whose primary language is not English are required to demonstrate proficiency in English for admission consideration. A student may receive a waiver to the Test of English as a Foreign Language (TOEFL or TOEFL iBT) requirement for purposes of admission to a UCI graduate program if the student completed all of the requirements for their high school diploma, bachelor's degree, or an advanced degree in a country where the primary and/or dominant language is English, **and** where English was the language of instruction of the school where the requirements were completed. The TOEFL/TOEFL iBT requirement may be waived for **admissions purposes only**. In addition, this policy pertains to the minimum UCI campus admission policy for English Language proficiency. Individual departments may have stricter requirements than the minimum campus standard. Applicants should always consult the department in which they are interested for specific requirements.

Proficiency in English may be demonstrated by passing one of two standardized, internationally administered tests: TOEFL (the Test of English as a Foreign Language), or IELTS (International English Language Testing System). The applicant should take one of these tests at the earliest available date to ensure that the scores are reported in time to meet application deadlines. Applicants will not be admitted provisionally if they lack an acceptable proficiency score or have not yet taken an acceptable proficiency examination.

The TOEFL is administered by Educational Testing Service (ETS), http://www.ets.org. The minimum score required for admissions consideration is 550 for the paper-based test; for the TOEFL iBT, the minimum required overall score for admissions consideration is 80. Please note that the minimum score requirements for admission to programs within The Paul Merage School of Business are 600 for the paper-based test and 100 for the TOEFL iBT.

TOEFL and TOEFL iBT scores that are two years old or older are not acceptable. Results of institutional (non-ETS) administrations of the TOEFL or TOEFL iBT are not acceptable.

English language proficiency may also be demonstrated by passing the Academic Modules of the International English Language Testing System (IELTS) examination (http://www.ielts.org). The minimum requirements for admissions consideration are an overall score of 7, with a score of no less than 6 on any individual module. IELTS test scores that are two years old or older are not acceptable.

DEMONSTRATION OF ORAL ENGLISH PROFICIENCY FOR INTERNATIONAL TEACHING ASSISTANT/ASSOCIATE EMPLOYMENT

Many UCI degree programs require students to serve as a Teaching Assistant for training purposes and as a graduation requirement. UCI encourages (and some individual graduate programs require) prospective students to take and pass one of the accepted oral English proficiency examinations prior to application/admission. International and U.S. Permanent Resident graduate students who are not citizens of countries where English is either the primary or dominant language as approved by the UCI Graduate Council, who wish to be considered for appointment as a Teaching Assistant/Associate, must pass one of the following English proficiency examinations: Test of Spoken English (TSE), Test of English as a Foreign Language Internet-based Test (TOEFL iBT), International English Language Testing System (IELTS), or UCI campus Speaking Proficiency English Assessment Kit (SPEAK) test. TOEFL iBT is administered by the Educational Testing Service (ETS). IELTS, on the other hand, is administered through the partnership of the British Council, IDP: IELTS Australia and the University of Cambridge ESOL Examinations. Once a student is admitted to UCI, the SPEAK test, which is administered by the UCI Humanities Instructional Resource Center (HIRC), is an option to satisfy this requirement. Achieving a minimum score of 26 on the speaking portion of the TOEFL iBT, a score of 8 on the speaking module of the IELTS, or a score of 50 on the SPEAK test satisfies the oral proficiency requirement and *may* establish eligibility for a Teaching Assistant/Associate appointment. Graduate students are responsible for ensuring that the UCI Graduate Division is notified directly of their scores by the testing centers. There is no exception to this requirement.

A full discussion of English proficiency options and links to the agency sites offering these examinations are available at http://www.grad.uci.edu/current/esl_tests.htm.

Students who are citizens of the United States (regardless of country of origin) and citizens of countries where English is either the primary or dominant language as approved by the UCI Graduate Council are exempt from the requirement of taking and passing the English language proficiency examinations. Non-U.S. citizens who are U.S. Permanent Residents or hold other non-citizen status and are residing in the United States, who have completed their undergraduate education in the United States, or have attended American schools abroad are *still* required to pass one of the English language proficiency examinations noted above in order to be eligible for an appointment as a Teaching Assistant/Associate. International and U.S. Permanent Resident graduate students whose native language is not English, who have completed *all years of their high school education* in the United States, are eligible to request an

exemption by submitting a request and official high school transcripts to the Graduate Student Employment Analyst in the Graduate Division. No student is permitted to begin an appointment as a Teaching Assistant/Associate until the exemption has been approved in writing.

SPECIAL NOTE TO FOREIGN APPLICANTS

If admitted, foreign applicants will be required to certify that they possess sufficient funds to cover all fees, transportation, and living expenses for the first year of their studies at UCI. A Confidential International Applicant Questionnaire for the purpose of verifying the amount and source of funds available for graduate study will be forwarded to foreign applicants upon admission to graduate study. The required financial verification must be provided before a visa can be issued.

Admission and Registration

A formal notice of the admission decision is sent to each applicant as soon as possible after the application and complete records are received, and after the department has made a recommendation. The official notification will be mailed well in advance of the beginning of the quarter for which application has been made.

Admission to graduate standing does not constitute registration for classes. A student is not officially registered for classes until the entire registration procedure is completed each quarter, including payment of registration and other University fees and enrollment in courses. Information on registration dates and procedures will be mailed to newly admitted students prior to the registration cycle. Extensive information for newly admitted students is available online at http://www.grad.uci.edu/newadmits/.

If an applicant wishes to defer admission to a later academic quarter (up to a maximum of three quarters after the original quarter of admission), the Graduate Division must be notified of the request in writing. After formal admission has been offered, the request for deferral must also be approved by the academic program to which the applicant was admitted.

Academic Advising

In each academic unit with an advanced degree program, there is at least one formally appointed faculty graduate advisor or director of graduate studies. The graduate program advisor is a regular faculty member responsible for supervising graduate study in that unit, for monitoring the academic progress of graduate students, and for seeing that each graduate student is assigned a faculty advisor. The graduate student's research advisor is responsible for mentoring the student, which includes meeting with the student at least once during each quarter of enrollment and providing an annual assessment of each student's timely academic progress. The graduate program advisor plays a key role in the academic lives of graduate students, advising students and other faculty members about program requirements and the academic policies pertaining to graduate students, approving study lists, and evaluating academic petitions. In many academic units the graduate program advisor is instrumental in the nomination of students for fellowship support, the selection of students for assistantship and fellowship appointments, and in the supervision of graduate student teachers. In most schools there also is an associate dean for graduate studies who coordinates many of the functions which affect graduate students within that school. Both graduate advisors as well as deans are important links between the student and the Dean of the Graduate Division.

Most graduate students also will have an individual faculty advisor or advising committee after the first year of graduate study. When a student is advanced to candidacy for the Ph.D., the doctoral committee becomes the primary source of academic guidance; however, student academic petitions still must be approved by the faculty graduate program advisor.

Academic Policies

The academic policies described here apply to students enrolled in study leading to graduate degrees and California education credentials. Other regulations and procedures are covered in the Academic Regulations and Enrollment and Other Procedures sections, and in the description of each graduate program.

ACADEMIC HONESTY

It is essential that all members of the academic community subscribe to the ideal of academic honesty and integrity and accept individual responsibility for their work. Students are urged to become familiar with the UCI Academic Senate Policies on Academic Honesty, available online at http://www.senate.uci.edu/9_IrvineManual/3ASMAppendices/Appendix08.html, and in the *Catalogue's* Appendix. The policies apply equally to electronic media and print, and involve text, images, and ideas.

SCHOLASTIC REQUIREMENTS

A graduate student is expected to make satisfactory progress toward an approved academic objective, as defined by the faculty of the program in accordance with policies of the Graduate Council, to maintain a satisfactory grade point average for all work undertaken while enrolled in graduate study, and to maintain academic progress within the required time to degree as established by the respective academic program. Satisfactory progress is determined on the basis of both the recent academic record and overall performance. A graduate student normally is expected to complete satisfactorily at least eight units of academic credit applicable to the graduate program in each regular academic session (unless on an approved leave of absence), and satisfy all requirements of the academic program according to an approved schedule. For a graduate student, only the grades A+, A, A-, B+, B, and S represent satisfactory scholarship and may be applied toward advanced degree requirements. However, a UCI course in which a grade of B- is earned may be accepted, via a formal petition process, in partial satisfaction of the degree requirements if the student has a grade point average of at least 3.0 in all courses applicable to the degree. Graduate students may not apply courses graded Pass/Not Pass toward any degree or satisfactory progress requirements. A grade point average below the B level (3.0 on a 4.0 scale) is not satisfactory, and a student whose grade point average is below that level is subject to academic disqualification.

A student's academic progress ordinarily is evaluated on the basis of the academic record, time-to-degree, and the professional judgment of the faculty. A few weeks after the end of a quarter, an updated copy of each enrolled student's permanent academic record is available from the Registrar. This record lists all UCI courses for which a graduate student was enrolled (including courses taken through the Intercampus Exchange Program), the grades assigned, and the cumulative grade point average. This record also includes formal candidacy for an advanced degree, degrees conferred, certain examinations passed, unit credit accepted from other institutions, and other important academic information.

A graduate student who has not demonstrated satisfactory academic progress is not eligible for any academic appointment such as Reader, Tutor, Graduate Student Researcher, Teaching Associate, or Teaching Assistant, and may not hold a fellowship or other award which is based upon academic merit.

SATISFACTION OF DEGREE REQUIREMENTS

To graduate, students must satisfy the degree requirements outlined in the *Catalogue* that is in effect for the quarter in which they are registering for a graduate program. If the degree requirements are subsequently revised, the academic unit may, where appropriate, give students the option to meet the new requirements instead. If degree requirements are revised between the time a student is admitted and the time a student registers, the unit should notify the student of the modifications in writing. A student who withdraws from a program, or loses student status for other reasons for one or more quarters, will be bound by the degree requirements in effect at the time of readmission unless otherwise stipulated and agreed to in writing by the academic unit and approved by the Dean of the Graduate Division. A student who defers admission or who changes to another program will be held to the requirements in effect at the time of first registration.

GRADING

With the consent of the academic units involved, and upon approval by the Graduate Council, individual study and research courses at the graduate level may be graded Satisfactory or Unsatisfactory (S/U). Also, with the approval of the Graduate Council certain graduate courses are graded S/U only. A grade of S is assumed equivalent to a grade of B (3.0) or better. No course credit is given to a student for a course in which a grade of U is received.

Graduate students may take one undergraduate course (up to four units) per quarter on a Pass/Not Pass basis. However, such courses are not considered part of the student's graduate program and are not applied toward the requirements for an advanced degree.

The grade of Incomplete (I) may be assigned by an instructor when the student's work is of passing quality but is incomplete because of circumstances beyond the student's control. Ordinarily, incomplete grades do not affect a graduate student's grade point average, but they are an important factor in evaluating academic progress. Further, when computing GPA to determine whether the student meets the minimum GPA requirement for graduation (3.0), I grades are counted as F (i.e., zero grade points). The maximum amount of time that an instructor may allow for making up incomplete work is three quarters of enrollment but stricter limits may be applied. When work is completed within the time allowed, the student should ask the instructor to submit a change-of-grade notice to the Registrar, through the dean of the school in which the course was offered. If not made up within the time allowed, an I grade is recorded permanently. (Students who have not been continuously enrolled should contact their graduate advisor for information about completion of incomplete grades.)

IP (In Progress) is a transcript notation restricted to sequential courses extending over two or more quarters for which use of the IP notation has been approved. When the last quarter of the sequence is completed, the grade for the final quarter is assigned for all quarters of the sequence. No credit is given until the student has completed the entire sequence.

A student who received an NR (No Report) transcript notation must immediately contact the instructor and arrange for the removal or replacement of the NR. If no action is taken by the end of the first quarter following the quarter in which the NR was assigned, or by the end of the quarter immediately preceding award of the degree, whichever comes first, the NR becomes an F, U, or NP and will remain permanently on the student's record.

A graduate student may repeat once a course in which a grade below B (3.0) or a grade of U was received. Only the most recently earned grade is used in computing the student's grade point average for the first eight units of repeated work; thereafter both the earlier and the later grades are used. Additional information about grading may be found in the Academic Regulations section.

LANGUAGE POLICY FOR EXAMINATIONS AND THESES/DISSERTATIONS

English is the language of instruction and examination for graduate courses at UCI, unless the subject matter includes foreign language content. Similarly, examinations that satisfy specific degree requirements, such as preliminary, comprehensive, qualifying/candidacy examinations and thesis/dissertation defenses shall be conducted in English, except for the portions of the examination where the subject matter makes a different language specifically appropriate. (Examples include foreign language literature, linguistics, and others.)

Students must seek permission to write their thesis/dissertation in a language other than English. To do so, immediately after advancement to candidacy, the candidate must submit to the Dean of the Graduate Division a letter approved by the thesis/dissertation chair, committee, and department chair. All members of the candidate's thesis/dissertation committee must have a reading knowledge of the language presented in the thesis/dissertation. There must be legitimate reasons for substituting English with a foreign language such as subject matter, special primary audience, publication arrangements, academic position in a foreign country, historical or literary value, or principal language(s) used in the documents to be analyzed and interpreted. **Inability to write in English is not a valid reason.** If the thesis or dissertation is approved to be written in a foreign language, the candidate must submit two abstracts. One must be in English. The other must be written in the language of the thesis or dissertation. Moreover, the thesis/dissertation defense will be conducted in English, except as determined by subject matter. See the *UCI Thesis and Dissertation Manual* for information about the preparation of manuscripts (http://www.lib.uci.edu/libraries/collections/special/uci_td/tdmanual.html).

ACADEMIC DISQUALIFICATION

After consultation with the student's academic unit, the Dean of the Graduate Division may disqualify a student for academic reasons, including, but not limited to, having a grade point average in graduate and upper-division courses below 3.0 for two or more successive quarters; or failing to pass (or not taking) a required examination or course within the time specified for that graduate program; or not maintaining satisfactory academic progress toward completion of an approved program of study. Beginning with students entering in fall 2010, the Graduate Dean will not permit students to enroll past their programs' maximum time to degree (MTTD). Any exception request must be made in writing directly to the Graduate Dean and will be considered in cases involving extenuating circumstances beyond the student's control. The exception request must include a plan and timeline for completion of the degree, must be signed by the student's program advisor and Associate Dean, and must be submitted at least one quarter in advance of maximum time to degree. Note that leaves of absence of up to three quarters and time allotted for parental leave are not counted toward a student's normative or maximum time to degree.

Unsatisfactory academic progress may be determined on the basis of explicit requirements (as described above), but the professional judgment of the faculty upon review of all graduate work undertaken by the student is paramount. Ordinarily, a student whose work does not meet academic standards may be given written notice and a reasonable period of time in which to make up all deficiencies.

Prior to taking final action to disqualify, the Dean of the Graduate Division ordinarily will notify a student who is subject to academic disqualification and will provide reasonable opportunity for the student to correct erroneous or outdated academic records, to

submit other information or comments in writing, or to request a second review of his or her academic performance.

Upon final written notice of academic disqualification by the Dean of the Graduate Division, disqualification will be noted on the formal academic record of that student.

ACADEMIC RESIDENCE

A graduate student is considered to be in residence during an academic quarter if at least four units of academic credit are earned in regular upper-division or graduate courses. Credit for one academic quarter of residence may also be earned by completing at least two units of credit in approved courses in each of two six-week summer sessions, or four units of credit in an eight- or ten-week summer session. In the case of Ph.D. students, these must be consecutive sessions.

ENROLLMENT POLICY

Full-time academic enrollment is expected of graduate students at the University of California. Study for the Ph.D. requires a full-time commitment from the doctoral student. Full-time study is defined as enrollment in at least 12 units of upper-division or graduate academic credit per quarter, including credit for supervised research or teaching. Graduate students may enroll in lower-division courses with the approval of their academic advisors, but such courses are not considered to be part of any graduate program.

Graduate students ordinarily may not receive credit for more than 12 units per quarter in graduate courses, or 16 units in upper-division courses, or a proportionate number in combination. Course loads in excess of 16 units must be approved in advance by the student's Graduate Advisor and the Dean of the Graduate Division.

Although in most instances completion of an advanced degree at UCI requires full-time study, the University recognizes the legitimate need for part-time study opportunities and is committed to providing those opportunities wherever possible. Graduate degree programs may be opened to part-time students wherever good educational reasons exist for so doing. In general, part-time status is available in master's and credential programs where part-time study has been judged academically feasible by faculty and approved by the Graduate Council. However, on the recommendation of the academic unit, students admitted to a Ph.D. program *may* be approved by the Dean of the Graduate Division for part-time status on an *ad hoc* basis. Under this policy, part-time enrollment at the graduate level is defined as enrollment for eight units or less. Within the guidelines and limitations noted on the application form available on the Graduate Division Web site, graduate students may petition for part-time status for a maximum of three consecutive quarters and, if the petition is approved, shall pay the full University Registration Fee and student activities fees, one-half the Educational Fee, and if applicable, one-half the Nonresident Tuition Fee and one-half the Professional School Student Fee.

CONTINUOUS REGISTRATION

A graduate student is expected to register for each regular academic session (fall, winter, and spring quarters) until all requirements for an advanced degree or credential have been completed, including final examinations and the submission of an approved thesis or dissertation. Registration is not official or complete until all required fees have been paid and the student has enrolled in classes. Students are responsible for ensuring that their course enrollment is correct and that their fees have been paid by the applicable deadlines.

A student engaged in study or research outside the state of California for an entire quarter ordinarily will be required to register *in absentia*. Unless an official leave of absence has been granted, or a petition to pay the Filing Fee in lieu of registration has been approved by the Dean of the Graduate Division, a student who does not register by the final deadline for any regular quarter will lose graduate standing (i.e., the individual's status as a graduate student will lapse), and candidacy for any advanced degree will lapse. Prior to resuming graduate study in the University, a former student must successfully apply for readmission. If readmitted, the student must satisfy the academic requirements in effect at the time of readmission and may be required to satisfy certain requirements a second time, including those for formal advancement to candidacy. A readmitted student must register and then be advanced to candidacy at least one quarter before receiving an advanced degree. A degree cannot be conferred earlier than the second quarter following readmission. Students must be registered or on approved Filing Fee status for the academic term in which the degree is conferred.

A graduate student who decides to leave the University after enrolling and paying fees for a quarter must file an official Withdrawal form with the Dean of the Graduate Division. A graduate student in good academic standing who wishes to withdraw temporarily from graduate study and intends to return within one year may submit an application for a leave of absence. A graduate student who wishes to apply for a leave of absence after enrolling and paying fees for a quarter must file both a Withdrawal form and an application for a leave of absence. If the leave is approved, the student remains in good standing and need not apply for readmission in order to enroll at the expiration of the leave period. Students who file a withdrawal for any reason, including leave of absence, after enrolling and paying fees are subject to the Registrar's Schedule of Refunds, available at http://www.reg.uci.edu/enrollment/withdrawals/#refunds.

IN ABSENTIA

In absentia status is a form of registration available to academic and professional degree graduate students undertaking necessary course work or research related to their degree programs outside of California. The Fee Policy for Graduate Student *in Absentia* Registration promotes continuous enrollment of graduate and professional degree students by providing an appropriate enrollment incentive. Research leaves for work outside of the state of California have been eliminated. Students registered *in absentia* are assessed 15 percent of the Registration and Educational fees, the full health insurance fees, and the Associated Graduate Students fee. If applicable, students are also assessed nonresident tuition and/or professional degree fees. All students pursuing doctoral or master's degrees in academic disciplines as well as those pursuing professional master's or doctoral degrees are eligible for the fee reduction. Students must be enrolled full-time in regular University of California units to be eligible for the reduced *in absentia* fee. Students in self-supporting graduate programs, exchange programs, or programs paying only a program fee are not covered by this policy and are not eligible for *in absentia* registration.

The research or course work must be directly related to the student's degree program as evidenced by UC faculty approval; must be of a nature that makes it necessary to be completed outside of California for at least one full academic term; must involve only indirect supervision appropriate to evaluating the student's academic progress and performance by UC faculty during the *in absentia* period; must involve no significant studying or in-person collaboration with UC faculty during the *in absentia* period.

Students who will be engaged in necessary degree-related course work or research off campus but within the state of California may be eligible for a leave of absence.

LEAVE OF ABSENCE

A graduate student who withdraws from the University with the intention of returning within one year and wishes to avoid a lapse of student status should request a leave of absence. A leave of absence of up to one year's duration may be granted by the Dean of the Graduate Division upon the recommendation of the student's academic unit, subject to the following guidelines:

1. The student must have **completed** satisfactorily at least one quarter in residence and be in good academic standing. The leave must be consistent with the student's academic objectives.
2. Leave ordinarily is approved in cases of serious illness or other temporary disability, or temporary interruption of the student's academic program for other appropriate reasons.
3. A student on leave is not eligible for assistance from a University fellowship, research grant, or financial aid program, and may not hold an academic appointment or be employed by the University in any capacity. During a period of leave, a student may not take comprehensive or qualifying examinations or earn academic credit (except by a transfer of credit from another institution approved in advance by the Dean of the Graduate Division). University resources and facilities, including housing, are ordinarily unavailable to students on leave.
4. A student failing to register for the next regular academic session following the expiration of leave will lose graduate standing and will be subject to the following readmission policy.

READMISSION

A student who previously withdrew from the University, or whose student status has lapsed, may request readmission to graduate study by submitting online a new *Application for Graduate Study* with the nonrefundable $70 fee. The Dean of the Graduate Division may grant readmission when recommended by the academic unit. If readmitted, a student's previous academic work will be applied toward the requirements for an advanced degree only with the approval of the graduate advisor and the Dean of the Graduate Division. A readmitted student must satisfy the academic requirements in effect at the time of readmission and may be required to satisfy certain requirements a second time, including those for formal advancement to candidacy. A readmitted student must register and then be advanced or reinstated to candidacy at least one quarter before receiving an advanced degree, which will be conferred no earlier than the second quarter following readmission. In exceptional circumstances, a student who has not registered by the end of the third week of classes may file a Readmission Petition with the Graduate Division during that academic term upon approval of the student's department chair and the respective school's associate dean, and payment of a $70 readmission fee.

INTERCAMPUS EXCHANGE PROGRAM

A graduate student in good standing who wishes to take advantage of educational opportunities available only at another campus of the University of California may do so through the Intercampus Exchange Program. Ordinarily, an exchange student will have demonstrated a high level of scholarship during at least one quarter of graduate study at the home campus and will have well-defined academic objectives. Approval of the faculty advisor, the host department(s), and the respective Deans of Graduate Studies is required. Direct arrangements between faculty members on the two campuses are encouraged so as to ensure that courses, seminars, or facilities will be available to meet the participating student's needs. Students may take courses on more than one campus of the University in the same academic session.

The exchange student enrolls and pays fees on the home campus and then enrolls at the host campus, following the procedures of that Registrar's Office. A report of academic work completed will be transferred to the student's academic record on the home campus after the term has ended. Although eligible for all normal student services, the exchange student is a visitor and is not formally admitted to graduate study at the host campus. Application forms for the Intercampus Exchange Program may be downloaded from the Graduate Division Web site at http://www.grad.uci.edu/forms/ and should be filed with the Office at least four weeks before the beginning of the quarter in order to avoid penalties.

TRANSFERS OF CREDIT

At least one-half of the course requirement for a master's degree must be completed while in residence as a graduate student at UCI. Credit for up to one-fifth of the minimum number of units required for a master's degree may be allowed for graduate-level work completed at another institution or through University Extension prior to first graduate enrollment at UCI. Such courses do not count toward the required number of units in 200-series courses. Up to one-half the units required may be accepted from another graduate division of the University of California. After enrollment, the student must initiate a formal petition for such credit and submit an original transcript. The acceptance of unit credit earned in another program must be recommended by the academic unit to which the student has been admitted and be approved by the Dean of the Graduate Division. No units of transfer credit will be given for any course in which a grade below B (3.0) or equivalent was assigned. Under no circumstances will grade credit be transferred.

A student currently enrolled in a master's degree program or on a leave of absence may receive unit credit (not grade credit) for graduate-level work completed at another institution or through University Extension only with the prior approval of the departmental graduate advisor and the Dean of the Graduate Division. No transfer credit will be given for any course in which a grade below B or equivalent is received.

A student who begins graduate study at UCI in the fall quarter will receive appropriate credit for courses taken in preceding UCI summer sessions, provided that the formal date of admission precedes summer session enrollment. Continuing graduate students will receive credit for courses taken in intervening UCI summer sessions.

Graduate Degrees

MASTER'S DEGREES

The master's degree is conferred at the end of the academic quarter in which all requirements have been satisfied, subject to the final approval of the Graduate Council. The student must be advanced to candidacy for the degree prior to the beginning of the final quarter of enrollment. Therefore, an application for advancement to candidacy, initiated by the student and approved by the academic unit, should be submitted to the Dean of the Graduate Division at least 30 days before the opening of the quarter in which the degree is expected.

The Master of Arts (M.A.) or Master of Science (M.S.) degree normally is attained by one of two routes: Plan I, the thesis option; or Plan II, the comprehensive examination option. Both require a minimum of one year in residence, satisfactory completion of prescribed course work, and an appropriate demonstration of achievement. Plan I includes a minimum of seven courses (28 units), 20 units or more of which must be at the graduate level; a thesis; and a general examination. Plan II requires at least nine courses (36 units), including 24 units or more at the graduate level, and a comprehensive examination covering a broad range of subject matter in the discipline. Only approved 200-series courses completed while in residence at the University satisfy the minimum graduate course requirement. Some programs will have course requirements exceeding the minimums cited above and may have additional or

alternative degree requirements. Please refer to the description of the specific program for more information.

Master of Fine Arts (M.F.A.) degrees are awarded by the Claire Trevor School of the Arts (M.F.A. in Dance, Drama, Fine Arts, Music, or Studio Art) and by the Program in Creative Writing (M.F.A. in English) upon successful completion of the equivalent of two years or more of full-time study with an emphasis upon creative expression and professional development. Special thesis or comprehensive examination requirements are established for these programs.

Master of Arts in Teaching (M.A.T.) degrees are awarded upon successful completion of programs designed for the professional development of elementary and secondary school teachers. A minimum of one year in residence is required, usually including summer session course work. A thesis project or other comparable evidence of professional attainment is part of each M.A.T. program.

Master of Business Administration (M.B.A.) degrees are awarded by The Paul Merage School of Business upon successful completion of the equivalent of two years of full-time study in the development of professional managerial skills.

Master of Advanced Study (M.A.S.) degrees are awarded by the School of Social Ecology in Criminology, Law and Society upon successful completion of 52 units of course work in the broad areas of criminal justice, including corrections, probation, criminal prosecution, defense, and civil law. The program is fully online with the exception of a required one-week in-residence course during the first fall quarter.

Master of Public Health (M.P.H.) degrees are awarded by the College of Health Sciences upon successful completion of 60 units of course work which include core courses, electives, and courses in the student's emphasis.

Master of Science (M.S.) in Nursing Science degrees are awarded by the College of Health Sciences upon successful completion of 68–71 units of course work, depending on the student's chosen area of specialization, as well as 720 hours of clinical practice in the student's area of emphasis to be eligible for certification.

Master of Urban and Regional Planning (M.U.R.P.) degrees are awarded by the School of Social Ecology upon successful completion of the equivalent of two years of full-time study in contemporary methods of planning and policy analysis.

DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy (Ph.D.) degree is awarded on the basis of evidence that the recipient possesses knowledge of a broad field of learning and expert mastery of a particular area of concentration within it. The research dissertation is expected to demonstrate critical judgment, intellectual synthesis, creativity, and skill in written communication.

Students are required to advance to candidacy for the doctorate, and to complete all requirements for the doctoral degree, within the normative time specified by the individual graduate program. Students who fail to complete the degree within the normative time limit for their program shall be deemed as not making satisfactory academic progress, and will not be qualified to continue to receive non-instructional University resources (e.g., financial aid, teaching assistantships, student housing). Normative time-to-degree parameters for each doctoral program are indicated in the academic unit sections of this *Catalogue*. Students who fail to complete the degree within the maximum time-to-degree limit for their program shall not be permitted to enroll. For details see the section above on Academic Disqualification.

The candidate for the Ph.D. is expected to be in full-time residence for at least six regular academic quarters. Four to six years of full-time academic work beyond the bachelor's degree typically is required to complete the degree. At the end of the first year or so of full-time study, many programs administer a preliminary examination on the student's mastery of fundamental knowledge in the discipline. Upon successfully demonstrating a high level of scholarship on this examination and after further study, the student will continue to a series of qualifying examinations which lead to formal advancement to candidacy for the Ph.D.

Graduate students ordinarily attain candidacy status for the Ph.D. degree when all preparatory work has been completed, when qualifying examinations have been passed, and when they are ready for the dissertation phase. Students are recommended for advancement to candidacy by unanimous vote of the candidacy committee nominated by the academic unit and appointed by the Dean of the Graduate Division on behalf of the Graduate Council. The Report of the Ph.D. Candidacy Committee (Form I) must be signed by the committee at the time the candidacy examination is concluded and submitted to the Dean of the Graduate Division. Following a unanimous favorable vote of the committee, the student will be advanced to candidacy upon payment of the $90 Candidacy Fee. Candidacy for the Ph.D. will lapse automatically if the student loses graduate standing by academic disqualification or failure to comply with the University policy on continuous registration. A readmitted student who was a candidate for the Ph.D. must again advance to candidacy and thereafter enroll as a candidate for at least one academic quarter before the Ph.D. may be conferred.

Following advancement to candidacy for the Ph.D., a doctoral committee nominated by the academic unit chair and appointed by the Dean of the Graduate Division on behalf of the Graduate Council, supervises the student's program, approves the dissertation, and conducts the final oral examination if required. The chair of the doctoral committee is the member of the faculty responsible for providing primary guidance of the student's dissertation. Ordinarily, the final examination will be given just prior to completion of the dissertation and while the student is in residence during a regular academic session. The final examination, or defense, is open to all members of the academic community. All student committees must conform to policy approved by the Graduate Council in effect at the time of examination. Ph.D. degrees are conferred, subject to the final approval of the Graduate Council, as of the last day of the regular academic quarter in which all requirements have been satisfied.

THESES AND DISSERTATIONS

Candidates for the Ph.D., Ed.D., and certain master's degrees must conduct an extensive research project and submit a dissertation or thesis in order to fulfill degree requirements. Research expenses are not supported by the University, and the cost of preparing the dissertation or thesis ordinarily ranges from $200 to $1,000, but may be considerably more.

After approval by the doctoral or thesis committee appointed for each candidate by the Dean of the Graduate Division, on behalf of the Graduate Council, doctoral and master's students must file their dissertation or thesis with the UC Irvine Library Special Collections and Archives, either in paper version or an electronic version. Generally, dissertations and theses are made available for public access unless an embargo has been requested for a specific period of time. The final copy must meet the University's requirements for style, format, and appearance before the degree can be conferred. A thesis and dissertation manuscript preparation manual is available online at http://www.lib.uci.edu/libraries/collections/special/uci_td/tdmanual.html. All doctoral students are required to submit an Exit Survey and a Survey of Earned Doctorates prior to the awarding of their degree.

Dissertations and theses must be filed by the deadline published on the Graduate Division Web site (http://www.grad.uci.edu/forms/students/filing_deadlines.pdf) in order for them to be reviewed and accepted in time for the degree to be conferred in that quarter.

Those students who complete requirements and submit theses/dissertations after the end of the tenth week of classes and prior to the start of the subsequent quarter will earn a degree for the following quarter, but *will not* be required to pay fees for that quarter. Please note that in order to avoid payment of fees, manuscripts, all forms, and degree paperwork must be submitted prior to the first day of the quarter in which the degree is to be earned.

THE FILING FEE

Under certain circumstances, a student who has advanced to candidacy for a graduate degree may be eligible to pay a Filing Fee equal to half of the Registration Fee in lieu of registration for any academic term including summer, subject to the approval of the Dean of the Graduate Division. International students who wish to go on Filing Fee status must, in addition, secure approval to do so from UCI's International Center. In general, all requirements for a degree must have been satisfied prior to the start of the quarter, except for the submission of the final version of the dissertation or thesis, or the completion of a final oral or comprehensive examination. A student on Filing Fee status may not make use of any University resource, hold any academic appointment, or receive any student service for which official registration and payment of regular fees is a requirement. A Filing Fee will not be accepted immediately following readmission nor immediately following a leave of absence except under exceptional circumstances. The date for payment of the Filing Fee is the same as that for the payment of other student fees. If all degree requirements are not completed during the academic term in which the Filing Fee is paid, the student must subsequently register and pay all applicable fees. Students may only utilize the filing fee option for one academic quarter during their graduate studies. Additional quarters are not allowed regardless of whether the student changes academic programs.

NONRESIDENT TUITION

Nonresident doctoral students who have advanced to candidacy are eligible for a 100 percent reduction in the annual nonresident tuition fee for a maximum of three consecutive calendar years including time on leave of absence. Reduced nonresident tuition begins with the first academic term following advancement to candidacy. Any nonresident student who continues to be enrolled, or who re-enrolls following the three-year maximum allowance, will be charged the full nonresident tuition rate that is in effect at that time of enrollment.

CONFERRAL OF GRADUATE DEGREES

Prior to the beginning of the quarter in which an advanced degree is to be conferred, the student must have advanced to candidacy for that degree and should have received formal notice confirming candidacy from the Dean of the Graduate Division. The student should consult the departmental faculty graduate advisor to determine which degree requirements, if any, have not yet been satisfied.

Students are advised by mail when their diplomas are available, which is approximately six months after the quarter in which the degrees are awarded.

Financial Assistance for Graduate Students

Several types of financial assistance are available to graduate students at UCI. These include fellowships, teaching and research assistantships, tuition fellowships for nonresident students, grants-in-aid, and student loans.

All domestic graduate students are encouraged to submit the *Free Application for Federal Student Aid* (FAFSA) each year to access state and federal grants and loans. It is available online at http://www.fafsa.ed.gov or in the Office of Financial Aid and Scholarships after January 1, with a submission deadline of March 2 each year. The Financial Aid section in this *Catalogue* and the Financial Aid Web site (http://www.ofas.uci.edu/content/) contain information about assistance based upon financial need that is administered by the Office of Financial Aid and Scholarships.

Applicants interested in assistantships or fellowships should so indicate on their application when applying for admission. The general campus deadline for completed graduate applications is January 15; however, many graduate programs have earlier, or later, deadlines. Students should contact the academic program to which they are applying for accurate deadlines, particularly to receive full consideration for fellowship and assistantship awards. Continuing students interested in an assistantship or fellowship should contact the graduate advisor for their academic program. The awarding of fellowships to incoming students for the following academic year begins in the winter quarter.

UCI subscribes to the agreement of the Council of Graduate Schools of the United States, under which successful applicants for awards of financial support are given until April 15 to accept or decline such awards. An award accepted from one of the member universities may be resigned at any time through April 15. However, an acceptance given or left in force after that date commits the student to not accepting another appointment without first obtaining formal release for that purpose from the awarding institution.

Regents', UCI Chancellor's Fellowships, and other merit-based fellowships are awarded by some schools to a number of promising students entering graduate study at UCI leading to the Doctor of Philosophy or Master of Fine Arts degree. Awards may include a stipend, all required student fees, and, if applicable, Nonresident Tuition. Other fellowships are offered, including tuition awards for outstanding applicants who are not residents of California. In many cases, fellowship stipends may be supplemented by partial assistantship appointments. Fellowship awards are typically made by the student's academic unit.

Entering or continuing graduate students may be awarded research or teaching assistantships for all or part of the academic year. The types of assistantships, number available, and required duties vary according to the activities of the academic unit. A graduate assistant who is not a California resident also may receive a tuition fellowship. While enrolled as a graduate student at UCI, students are limited in their employment with the University to no more than 50 percent time during each academic quarter. Fellowship support as well as research or teaching assistantships all require students to maintain satisfactory academic progress as defined by UC and UCI policy as well as by their academic units.

Through the Graduate Division's diversity programs, a number of diversity fellowships are awarded to entering and continuing domestic graduate students who may have been disadvantaged in higher education. Departments nominate candidates on the basis of their merit and contribution to the diversity of the department or discipline, as well as demonstrated scholastic achievement, full-time status, and U.S. citizenship or permanent residency. Individuals from diverse cultural, geographic, and socioeconomic backgrounds are especially encouraged to apply to UCI's graduate programs. In conformance with State law, applicants may not be given preferential treatment on the basis of race, ethnicity, gender, religion, or national origin.

CLAIRE TREVOR SCHOOL OF THE ARTS

Joseph S. Lewis III, **Dean**

Arts Student Affairs
101 Mesa Arts Building; (949) 824-6646
http://www.arts.uci.edu/

The Claire Trevor School of the Arts is dedicated to the study, creation, and performance of the arts within the context of their history and theory. Both undergraduate and graduate degree programs are offered and include extensive studio, workshop, and performing experiences; theoretical and historical studies; and work in arts technology and criticism. The School consists of the Departments of Dance, Drama, Music, and Studio Art; the undergraduate program in Arts and Humanities; a minor in Digital Arts; and a concentration in Game Culture and Technology.

The School's departments are located near each other, facilitating daily interaction among student and faculty in all Arts disciplines. Facilities include studios and classrooms, four theatres, a concert hall, the University Art Gallery, the Donald R. and Joan F. Beall Center for Art and Technology, the New Media Arts Building, the Gassmann Electronic Studio, the Motion Capture Studio, the Arts Media Center, the Arts Computing Laboratory, the Digital Arts Teaching and Research Laboratories, a television studio, and professionally managed and staffed theatrical production shops and publicity and box offices supporting the School's extensive production and performance schedule.

Arts students regularly participate in choirs, instrumental ensembles, drama and dance productions, and art exhibitions. Qualified students from other academic areas also are eligible to participate in many of these activities and are encouraged to do so. Some of the School's productions take place in the Irvine Barclay Theatre, a fully equipped, 756-seat performing facility.

In addition to the artists, scholars, and performers who are members of the Arts faculty, visits by distinguished guest artists/teachers are a feature of the School's activities.

Students receive assistance with program planning and a variety of other support services from the professional staff in the Office of the Arts Student Affairs. The staff also assists the faculty in providing academic counseling to Arts students.

DEGREES

Arts and Humanities	B.A.
Dance	B.A., B.F.A., M.F.A.
Drama and Theatre	Ph.D.[1]
Drama	B.A., M.F.A.
Fine Arts	M.F.A.[2]
Music	B.A., B.Mus., M.F.A.
Music Theatre	B.F.A.
Studio Art	B.A., M.F.A.

[1] UCI and UCSD joint program.

[2] Currently not admitting students.

Change of Major

Students who wish to change their major to one offered by the School should contact the Arts Student Affairs Office for information about change-of-major requirements, procedures, and policies. Additionally, students should refer to the information available at http://www.changeofmajor.uci.edu.

Special Programs of Study

CONCENTRATION IN MEDIEVAL STUDIES

The concentration in Medieval Studies allows undergraduate students in the Schools of the Arts and Humanities to augment their major by completing a coherent program of courses in the area of medieval studies. See the School of Humanities section for additional information.

MINOR IN DIGITAL ARTS

The minor in Digital Arts provides opportunities to explore creativity through digital media arts for students who want to acquire a working knowledge of how digital content is conceived, constructed, and performed. See page 95 for more information.

MINOR IN RELIGIOUS STUDIES

The interdisciplinary minor in Religious Studies focuses on the comparative study of religions in various cultural settings around the world. The curriculum seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society through study in the Schools of Humanities, Social Science, Social Ecology, and the Arts. See the School of Humanities section for additional information.

CAMPUSWIDE HONORS PROGRAM

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

EDUCATION ABROAD PROGRAM

Upper-division and, in some cases, graduate students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. See the Education Abroad Program section for additional information.

Honors

Students who have distinguished themselves academically will be considered for honors at graduation. General criteria are that students must have completed at least 72 units in residence at a University of California campus and must have a cumulative grade point average of 3.5 or better, including the grades from the final quarter. In keeping with the Academic Senate Resolution, no more than 12 percent of the graduating seniors may receive such academic honors. Other important factors are considered (see page 52). Individual departments may offer other special honors to students who have excelled in their major subject.

Creative Connections Opportunities

Arts Outreach at the Claire Trevor School of the Arts partners with local school districts, arts organizations, and community centers to share the School's talents and knowledge beyond the UCI campus. One such outreach program is Creative Connections, which provides exceptional opportunities for School of the Arts students to earn valuable practical experience in K–12 classrooms and in community settings. Projects range from integrating arts into core curriculum in K–6, to workshops in the arts for middle and high

schools, to college application mentorship for high school seniors and community college students interested in arts majors. Two units of independent study are available, and in some cases stipends are offered. All Claire Trevor School of the Arts students who hold a minimum 3.0 GPA have the opportunity to apply for these programs.

Scholarships

The Claire Trevor School of the Arts has some scholarship monies available to incoming and to continuing students on both the undergraduate and graduate levels. For complete information, please contact the Arts Student Affairs Office.

Edna Helen Beach Scholarship: Provides $1,000 per year for two years for an incoming freshman student, and $1,000 for one year for an incoming transfer student. Recipient must be gifted and talented, and will be selected from eligible students with special emphasis on those from underprivileged backgrounds who would not otherwise be able to attend a major research institution.

Kris and Linda Elftmann Scholarship: Up to $3,000 awarded to an outstanding student.

Leo Freedman Graduate Fellowship: For outstanding applicants from Orange County, California, preferably from Anaheim; two fellowships of approximately $7,000 each for the academic year.

Ann and Gordon Getty Foundation Music Scholarship: Up to $500 awarded to a music student in any instrument or voice.

William J. Gillespie Foundation Scholarships: Several scholarships in varying amounts, awarded to outstanding Dance majors.

Alice Lowell Memorial Scholarship: For students majoring in Music.

Steve Lyle Memorial Scholarship: $2,000 awarded to continuing students in Drama; selected by application and recommendation.

Margie McDade Memorial Scholarship: For students majoring in Music and studying piano.

Marjorie and Robert Rawlins Scholarship: For full-time students majoring in Music and studying piano, violin, viola, or cello.

Frederick Reines Music Scholarship: For students majoring in Music and studying voice.

Harry and Marjorie Ann Slim Memorial Scholarship: For students majoring in Music.

Winifred W. Smith Scholarship: For students majoring in Music and studying cello, violin, or piano (preferably cello).

Elizabeth and Thomas Tierney Scholarship: Up to $3,000 awarded annually to an outstanding student.

UCI Town and Gown Music Scholarships: For students majoring in Music.

Phyllis Kovach Vacca Memorial Scholarship: For students majoring in Music and studying cello, piano, or violin.

Bette and Steven Warner Scholarship: For outstanding students in the Music Department's voice program and the Drama Department.

Undergraduate Program

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements: Refer to individual departments.

Graduate Program

The primary endeavor of the Claire Trevor School of the Arts is the creative act. Research activities are pursued both as an end in themselves and as a source that can inform both performance and the studio experience. The intellectual activity of theoretical, literary, and historical courses complements the practical work in studio workshops and performance. The aim of the M.F.A. programs in Dance, Drama, Music, and Studio Art is, thus, to produce artists literate in both traditional and digital media who are disciplined, responsive to intellectual stimuli, and capable of integrating existing knowledge into creative projects. The UCI-UCSD joint doctoral program in Drama and Theatre provides opportunity for significant crossover research and teaching between the two campuses in a wide range of areas in drama and the theatre. It is the strong belief of the UCI Claire Trevor School of the Arts that intellectual integrity and creative excellence cannot exist without each other.

ADMISSION TO THE PROGRAM

Applications are accepted for fall quarter admission only, and ordinarily must be completed by January 15 for the Ph.D. in Drama and Theatre, the M.F.A. in Dance, the M.F.A. in Music, and the M.F.A. in Studio Art. The number of graduate students that can be admitted to the Claire Trevor School of the Arts is limited. Applicants are advised to arrange for auditions, interviews, and the submission of portfolios, compositions, and dossiers by the appropriate deadlines. Students applying for scholarships and fellowships should do so by January 15, and are also encouraged to apply for financial assistance through the Office of Financial Aid and Scholarships. The Claire Trevor School of the Arts has a modest number of teaching assistantships available in all areas, and all candidates are automatically reviewed for teaching assistantship positions; the School informs successful candidates by June 1 for the following academic year.

Upon admission to the program the student is assigned an advisor. Students should discuss with their advisor the scope of undergraduate preparation to determine any areas which may need strengthening if full benefit from graduate study is to be derived.

Minor in Digital Arts

John Crawford, **Director**

The minor in Digital Arts provides opportunities to explore creativity through digital media arts. This program is open to students from all areas of UCI who want to acquire a working knowledge of how digital media content is conceived, constructed, and performed. In the studio, students receive hands-on experience with current software tools, creating and sharing digital media art projects, developing an appreciation of digital media aesthetics and conceptual design, and learning the fundamentals of desktop video, audio, and Web authoring software applications. Lectures and discussions examine how today's pervasive digital culture evolves through interdisciplinary collaborations among artists, engineers, scientists, and scholars. Course work considers relationships between digital media practices, touching on such areas as social networking, video/audio podcasting, interface design, digital music, telematic performance, intelligent agents, virtual realities, artificial life, and ubiquitous computing. The program investigates critical issues related to emerging technologies and the arts, and surveys recent works by leading digital media artists.

Prospective students should have basic proficiency with Web, e-mail, word processing, and presentation software. It is highly recommended that students have their own computer. Further information is available at http://digital.arts.uci.edu.

REQUIREMENTS FOR THE MINOR

The Minor in Digital Arts consists of a minimum of eight courses which fall into two categories: I. Required and II. Elective.

I. Required: Arts 1A (Arts Core), 11 (Digital Media: History and Foundations), 12 (Digital Media: Current Directions), 50 (Digital

Media: Experience and Content), 60 (Digital Media: Video/Audio for the Web), and 70 (Digital Media: Interaction Design).

II. Elective. Choose two of the following: Arts 75 (Digital Media: Exhibition); Dance 163 (Dance and Video Technology), 164 (Screendance); Music 51 (Music Technology and Computers), 147 (Studies in Music Technology), 151 (Computer Music Composition), 152 (Interactive Arts Programming); Studio Art 65A (Foundations in Media Design), 65B (Foundations in Internet Art and Design), 81A (Video Production), 81B (Video Stage Production), 100 (when topic is related to digital arts), 106A (Programming for Artists), 106B (Game Studies), 106C (Design for Print), 130A (Projects in New Technologies), and 143 (Projects in Computer Painting).

Each of these courses may be taken one time only for credit toward the minor (with the exception of topic-varies courses, e.g., Studio Art 100). No course in the requirements for the minor may be taken Pass/Not Pass.

Courses in Arts

***(Schedule of Classes* designation: Arts)**

LOWER-DIVISION

1A Arts Core (4) F. An introduction to the arts in general, and to the arts at UCI. Concentration on (1) the interdisciplinary nature of the arts, and (2) the content of particular arts disciplines. **(IV)**

11 Digital Media: History and Foundations (4). An introduction to the historical and theoretical foundations of digital media art, tracing how information technologies seeded the growth of a new expressive medium. Considers how today's pervasive digital culture evolved through interdisciplinary collaborations between artists, engineers, scientists, and scholars.

12 Digital Media: Current Directions (4). An overview of current practice and research in digital media art. Examines the effects of recent technological, scientific, cultural, and political developments. Addresses the increasing overlap of artistic and scientific practices and issues related to new and emerging technologies.

50 Digital Media: Experience and Content (4). A project-based introduction to tools and approaches for creating and sharing digital media content within Internet-mediated social environments, with a particular emphasis on art-making and personal expression. Includes an overview of basic user experience and interaction design principles. Prerequisites: Arts 11 and 12.

60 Digital Media: Video and Audio for the Web (4). An overview of digital video and audio production for the Web, emphasizing art-making and personal expression. Includes digital media aesthetics and conceptual design, basic audio and video recording, and fundamentals of desktop video, audio, and Web authoring software applications. Prerequisites: Arts 11, 12, and 50.

70 Digital Media: Interaction Design (4). Principles and practices of interaction design for interactive digital media systems that provide for active involvement of the participant. Students gain experience with interaction design issues through a series of media art projects, emphasizing art-making and personal expression. Prerequisites: Arts 11, 12, 50, and 60.

75 Digital Media: Exhibition (4). A discussion and critique course in all media arts. Includes a review of key media arts concepts and the preparation of an end-of-quarter exhibition. Acceptance into course based on proposal submission and faculty approval. Prerequisites: Arts 11, 12, 50, 60.

UPPER-DIVISION

100A-B-C The Senior Thesis (4-4-4) F, W, S. Planning, drafting, writing, and presentation of an academic thesis. Open to Arts Interdisciplinary majors, who will interrelate two or more artistic disciplines, and to Campuswide Honors Program students, who will focus their thesis on one or more major areas in the Arts. Prerequisite for 100B: 100A. Prerequisites for 100C: 100B and satisfactory completion of the lower-division writing requirement.

199 Independent Study (1 to 4) F, W, S. Individual study or directed projects as arranged with faculty member. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

DEPARTMENT OF DANCE

301 Mesa Arts Building; (949) 824-7284
Lisa Naugle, **Department Chair**

Faculty

David Allan, Choreographer/Former Soloist, National Ballet of Canada; Choreographer, ballet companies, operas, film, and television, *Associate Professor of Dance* (ballet, pas de deux, choreography)

Mary Corey, M.A. University of California, Riverside, Certified Professional Labanotator, *Professor of Dance* (dance history, modern dance, notation and reconstruction, dance and digital technology)

John Crawford, Media Artist and Software Designer, *Director of the Digital Arts Minor and Associate Professor of Dance* (dance film, interactive media, telematic performance, motion capture, digital arts)

Diane Diefenderfer, Former Soloist, Los Angeles Ballet, Eglevsky Ballet Company, Frankfurt Ballet Company, *Lecturer in Dance* (ballet, pointe)

Jennifer Fisher, Ph.D. University of California, Riverside, *Co-Director of the Arts and Humanities Major and Associate Professor of Dance* (dance history and theory, ethnography, performance studies)

Israel "El" Gabriel, Former Assistant Artistic Director, Bat Dor Dance Company of Israel, *Lecturer with Security of Employment* (ballet, modern, pas de deux, repertory)

Jodie Gates, Choreographer; former Principal Dancer with The Joffrey Ballet, The Pennsylvania Ballet and Ballet Frankfurt; Director of the Laguna Dance Festival; *Assistant Professor of Dance* (ballet, choreography, pointe)

Loretta Livingston, B.F.A. California Institute of the Arts; Certified Laban Movement Analyst; former principal with Bella Lewitzky Dance Company, *Associate Professor of Dance* (modern dance, choreography, improvisation, Laban movement analysis, teaching of dance)

Molly Lynch, M.F.A. University of California, Irvine; Pilates Certified; Choreographer/Artistic Director of the National Choreographers Initiative; *Assistant Professor of Dance* (ballet, pointe, repertory, partnering)

Donald McKayle, Choreographer/Director, *Professor Emeritus of Dance* (choreography, modern dance)

Lisa Marie Naugle, Ph.D., New York University, *Department Chair and Professor of Dance* (modern dance, choreography, dance and digital technology, improvisation, teaching of dance)

James Penrod, M.F.A. University of California, Irvine; C.M.A. Laban Institute of Movement Studies, *Professor Emeritus of Dance* (ballet, modern, dance notation, choreography, movement analysis)

Janice Gudde Plastino, Ph.D. University of Southern California, *Professor Emerita of Dance* (kinesiology/anatomy, research methods, choreography, dance science/medicine)

Jeffrey A. Russell, M.S. University of Arizona; Certified Athletic Trainer, National Athletic Trainers' Association, *Acting Assistant Professor of Dance* (dance medicine and science, dance kinesiology)

Nancy Lee Ruyter, Ph.D. Claremont Graduate School, *Professor of Dance* (dance history, Spanish dance, bibliography and research)

Alan Terricciano, M.A. Eastman School of Music, *Professor of Dance* (musical resources, music for dancers, dance accompaniment, composition, multimedia arts)

Sheron Wray, M.A. Performing Arts, Middlesex University, *Assistant Professor of Dance* (jazz, choreography and improvisation)

The Department of Dance fosters an educational environment in which performance opportunities, creative projects, and theoretical studies complement and reinforce each other, providing a foundation for careers in dance. The program focuses on the dance techniques of ballet, modern, jazz, tap, world dance, and dance and technology. Theoretical studies include dance history and theory; dance writing; Laban studies; dance pedagogy; dance ethnography; dance science; and aesthetics of digital media. Creative opportunities bridge the studio and theoretical work through performance and choreography for multiple contexts; creative applications of animation, motion capture, audio and video technologies; lecture demonstration; and critical, historical, ethnographical, and scientific writing.

The objective of studio work is to develop kinesthetic resources, precision, flexibility, creativity, and freedom in a coordinated and intelligently responsive dancer. The techniques of classical ballet, modern dance, and jazz constitute crafts and styles for the dancer that serve not only as a basis for the training of the body, but also as a basic language of movement for the choreographer.

The theoretical, historical, and scientific courses are designed both to broaden the perspective of those students whose first interest is performance or choreography, and to provide a foundation for those students who plan to pursue careers in the academic, scientific, technological, or administrative fields of dance.

The dance archives in the UCI Langson Library Special Collections offer a rich source of research materials which enhance the Dance program. Among other special holdings, the archives include the extensive Ruth Clark Lert collection of dance books, journals, photographs, original costume sketches, and memorabilia of dance in Europe and the United States from pre-World War I to the present.

CAREERS FOR THE DANCE MAJOR

Careers in dance require excellent training and extraordinary discipline, tenacity, and dedication. Graduates of the Department have an excellent record of placement in the many fields of dance. Some have become professional dancers in ballet companies (including the Metropolitan Opera Ballet, San Francisco Ballet, Nashville Ballet, and Ballet Pacifica); in modern dance companies (including Hubbard Street Dance Company, MOMIX, and Martha Graham Dance Ensemble); in touring companies (including The Lion King, Fame: The Musical, Carousel, and Cirque du Soleil); and in films, television, and theatre.

In addition to training for professional dance performance and choreography, the major in dance serves as a basis for graduate study or job opportunities in fields such as dance history, dance science, dance pedagogy, dance reconstruction, dance criticism, dance video, and technology. Related fields, such as arts administration, law in relation to the arts, arts therapies, design and production, and music also offer positions for graduates. Students who are interested in a career in athletic training, physical therapy, or dance science will find a major in Dance, with related course work in chemistry, physics, biology, and mathematics, to be excellent preparation for further study.

THE UNDERGRADUATE PROGRAM

The Bachelor of Arts (B.A.) is designed for those who wish to obtain a broad undergraduate background as preparation for careers or graduate work and related fields. It offers students a dance education that stresses performance and choreography, and, at the same time, intellectual depth and scope. In addition to the core, 12 units of elective Dance courses are required. The remaining elective units required for graduation may be chosen from Dance or other disciplines in relation to a student's individual interest. While the program of study in Dance stresses technical proficiency and academic understanding in dance, the B.A. degree program also enables students to pursue elective subjects in their special areas of interest in other academic disciplines.

The Bachelor of Fine Arts (B.F.A.) degree program with specializations in Performance and Choreography, is designed for students who wish to prepare intensively for careers in those areas. The courses required in addition to the core are primarily in Dance. The B.F.A. program allows for a few free electives in other areas. Admission to the B.F.A. program with a specialization in Choreography is by faculty approval only.

The B.F.A. program with a specialization in Performance does not require additional faculty approval beyond the required audition for admission to the Dance major; students should declare their intention to pursue this specialization during spring quarter of their sophomore year.

Proficiency Levels

In addition to meeting the general requirements for admission to UCI, applicants must demonstrate technical/creative promise. The Department holds annual entrance auditions for potential freshmen and transfer students during winter quarter prior to the fall quarter when entrance is anticipated. First-year students wishing to major in Dance must be at technique level II in at least one of the three major genres (ballet, modern, jazz).

Placement auditions for admitted students are held during Welcome Week to determine levels of technical ability for placement in courses. It is suggested that transfer students wishing to pursue a B.A. degree in Dance complete, in addition to their general education requirements, one course in choreography, two courses in dance technique, and one course in music for dancers prior to transfer to UCI.

Previously admitted majors who wish to obtain a B.F.A. degree should contact the School of the Arts Student Affairs Office to obtain information about change of major requirements, procedures, and policies.

Transfer students wishing to pursue the B.F.A. degree must declare their intention in writing at the time of their entrance audition and demonstrate technique and/or choreography levels appropriate to their year. It is suggested that transfer students complete, in addition to their general education requirements, one course in choreography, two courses in dance technique, one course in music for dancers, and one course in dance performance prior to transfer to UCI.

Students deficient in level of performance or academic preparation should be prepared to extend their studies beyond the normal four-year program in order to meet the requirements for graduation.

REQUIREMENTS FOR THE B.A. DEGREE IN DANCE

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements for the Major

Dance 2 (Dance Health and Injury Prevention); Dance 21A (Music for Dancers); Dance 60A (Choreography); Dance 90A-B-C (Dance History); Dance 100 (Kinesiology for Dance); Dance 180A-B *or* A-C (Laban Studies); Dance 185 (Critical Issues in Dance).

Technique: Students must complete at least one Dance technique course (ballet, modern dance, jazz, Spanish, world dance, pointe, social dance, tap, or repertory) each quarter in residence. At a minimum, students must complete level II in Ballet, Modern, and Jazz (Dance 132A-B-C, Dance 142A-B-C, and Dance 152A-B-C) *and* level III in either Ballet or Modern (Dance 133A-B-C or Dance 143A-B-C). Students who place above level II in any technique must take a year of that technique at the level in which they are placed. All students must also complete one course chosen from Dance 12A, 12B, 12C (Spanish Dance), 14 (Social Dance), 52A, 52B, 52C (Tap I), 110 (World Dance), or 150A, 150B, 150C (Tap II). NOTE: Units earned in ballet, jazz, and modern technique courses beyond the required amount do not count toward departmental elective requirements but may count toward University requirements.

Performance: Two performances from any of the Dance 170 series.

Four units of Drama 101 (Theater Production) must be taken during the first year in residence.

Electives: 12 units of electives must be completed within the major.

REQUIREMENTS FOR THE B.F.A. DEGREE IN DANCE

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements for the Major

Students must complete the departmental requirements as listed for the B.A. degree in Dance. In addition, B.F.A. students must complete the requirements for either the specialization in Choreography or Performance.

Choreography Specialization: Dance 60B-C (Choreography I); Dance 127A (Costume Design for Dance); Drama 30A (Acting); Drama 50C (Lighting Design); any three quarters of courses chosen from Dance 162A-B-C (Choreography II) and Dance 164A (Video Choreography); two courses in Dance 165 (Choreographic Projects—one original choreographic work, approved by the faculty, must be presented in both the junior and senior years); four units (one or two courses) in Art History, Music, Studio Art, or Drama (in addition to Drama 30A, Drama 50C, and Drama 101 requirements).

Performance Specialization: *Technique:* Dance 134A-B-C (Ballet IV) *or* Dance 135A-B-C (Ballet V) *or* Dance 144A-B-C (Modern IV); Dance 153A-B-C (Jazz III); Dance 139 (Partnering).

Performance: Dance 137 (Repertory) or Dance 179 (Etude Ensemble); Dance 170 series: must be in three additional performances beyond the B.A. requirements, one of which must be Dance 170, 171, 172, or 174; Drama 30A (Acting) or a fourth additional performance in the Dance 170 series. Dance 171 and 172 may be repeated for credit. Students must demonstrate proficiency in at least two dance genres in these performances.

Sample Program for Freshmen (B.A. and B.F.A. Programs)

Fall	Winter	Spring
Writing 39B	Writing 39C	Dance 2
Dance 21A	General Education	General Education
Technique	General Education	General Education
General Education	Technique	Technique
	Drama 101 (2 units)	Drama 101 (2 units)

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Dance.

General Information

The M.F.A. program is an intensive program requiring a core of courses in studio and academic areas. The student's individual area of interest is explored through the thesis project in the second year. Projects or written theses may be pursued in choreography, video choreography, dance training, dance history and theory, ethnography, dance science, dance reconstruction, and dance and digital technology.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A. or B.F.A. in Dance or the equivalent. Candidates must meet the minimum requirements for the B.A. degree in Dance at UCI. Proposals for three choreographic works that could be completed in the graduate program must be submitted. An audition in ballet and modern technique is required for admission and is held in winter quarter. At this audition, applicants must also present a prepared five-minute choreographed piece, which may be a solo performed by the applicant, or a videotape of the applicant's choreography. Interviews with faculty are conducted following the audition, and applicants are given a short writing exercise.

Teaching Assistantships

Graduate students are encouraged to apply for teaching assistantships in areas such as notation, dance science, history, music for dancers, choreography, world dance, dance video, critical issues, and all technique classes. Students with expertise in any of these areas are given special consideration.

General Degree Requirements

Normally two years of residence are required. Each candidate must enroll for three courses each quarter for six quarters, exclusive of summer sessions.

In the second year, satisfactory attainment must be demonstrated by a major thesis; in choreography this consists of the composition and production of a choreographic work; in other areas, such as dance history, dance training, or dance science, this consists of a written thesis or a comprehensive project in a chosen area of study. All theses must be defended in a one-hour oral examination which may also test the candidate's general knowledge in the area.

The normative time to degree for students in the M.F.A. program is two years. Residence is required. The normative time to degree can be extended to three years only when a student requests extra time for more involved thesis research through a petition to the Chair of the Department. The maximum time to degree is three years. Students who do not complete the degree in three years will be dropped from the program.

Specific Degree Requirements

Seventy-two quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B in each course. No more than 20 units in upper-division courses may count toward the degree. Fulfillment of the technique course requirements must be approved by the faculty advisor.

Required Courses

Six courses chosen from any graduate or upper-division dance technique course; Seminar in Kinesiology for Dance (Dance 201); Musical Resources (Dance 222); Teaching of Dance Techniques (Dance 225); two courses in Graduate Choreography (Dance 261); Dance and Video Technology (Dance 281); Movement Analysis (Dance 282); Critical Issues in Dance (Dance 283); Bibliography and Research (Dance 284); Thesis (Dance 286); Proseminar in Dance History (Dance 296).

By the end of their first year, students will choose their area of study for their thesis. Students who wish to produce a choreographic thesis must apply to the graduate choreography advisor during winter of their first year. The faculty will review the applications and will consider the quality of the student's work in Dance 261, as well as the choreographic proposal, in making their selection.

Courses in Dance

***(Schedule of Classes* designation: Dance)**

LOWER-DIVISION

NOTE: Some courses are not offered every year. Please check with the department advisor.

2 Dance Health and Injury Prevention (2). An overview of factors that affect the health of dancers. Includes evaluation of general health measures and prevention and management of common dance injuries.

12A-B-C Studio Workshop in Spanish Dance (2-2-2) F, W, S. Principles of Spanish dance with focus on basic movement techniques, castanet work, and introduction to flamenco and other Spanish dance genres. May be taken for credit three times. **(IX)**

14 Social Dance (2). Contemporary and historical forms. Current ballroom, disco, and Western square dance forms; Latin ballroom dances; dances from the 20s, 30s, and 40s. Pass/Not Pass only. **(IX)**

21A Music for Dancers (4). Emphasis on the development of musical skills most pertinent to the dancer: vocabulary, notational literacy, rhythmic and melodic acuity, score reading, and fundamental analysis; working with live accompaniment.

30A-B-C Studio Workshop in Ballet I (2-2-2) F, W, S, (30) Summer. Fundamentals of ballet technique: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Pass/Not Pass only. May be taken for credit twice. **(IX)**

34 Men's Studio Workshop in Ballet (2) F, W, S. Emphasis on men's traditional ballet, techniques, and movements. Prerequisites: Dance 30A-B-C. May be repeated for credit. **(IX)**

40A-B-C Studio Workshop in Modern I (2-2-2) F, W, S, (40) Summer. Fundamentals of modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman. Pass/Not Pass only. May be taken for credit twice. **(IX)**

50A-B-C Studio Workshop in Jazz I (2-2-2) F, W, S. (50) Summer. Fundamentals of jazz: principles of jazz dance and contemporary forms incorporating the personal point of view of the instructor. Pass/Not Pass only. May be taken for credit twice. **(IX)**

52A-B-C Workshop in Tap I (2-2-2) F, W, S. Beginning tap: principles of rhythm and basic tap steps. Course sequence may be taken for credit twice. **(IX)**

60A-B-C Choreography I (4-4-4) F, W, S. Beginning-to-intermediate study of principles of dance composition. May include composition assignments for stage and video. By audition, works may be shown quarterly in public studio performances.

80 Introduction to Dance (4). Survey of nineteenth- and twentieth-century ballet, modern dance, and theatre dance. For non-majors only. Dance 80 and Dance 90A-B-C may not both be taken for credit. **(VIII)**

82 Topics in World Dance (4). Various topics in world dance studies focusing on historical, social, and cultural contexts. May be repeated for credit as topics vary. **(VIII)**

90A-B-C Dance History A, B, C (4-4-4) F, W, S. 90A: Global perspectives. Topics and histories of dance and movement practices from various parts of the world. **90B:** The history of dance in the western tradition from the Renaissance through the nineteenth century. **90C:** The history of dance in the western tradition: the twentieth and twenty-first centuries. Dance 90A-B-C and Dance 80 may not both be taken for credit. **(IV, VIII)**

UPPER-DIVISION

100 Kinesiology for Dance (4). The study of the production of dance movement or lack of dance movement by the muscles of the body. Anatomical and dynamic analysis of dance movement.

103 Pilates (2). Basics of technique emphasizing alignment, breath control, correction of muscular imbalances. Use of the Universal Reformer. Prerequisites: Dance 133A-B-C, 143A-B-C.

110 World Dance (2). Studio workshop of dances and movement sources of specified countries or areas. May be taken for credit six times as topic varies. **(IX)**

125A Teaching of Dance (4). Pedagogy. The methods and theory of teaching dance forms. Prerequisites: Dance 133A-B-C and 143A-B-C; upper-division standing.

127A Costume Design for Dance (4). Costume design and construction specific to the body in motion: Theoretical study and practical execution.

130A-B-C Pointe Class (2-2-2). Beginning and intermediate pointe work; principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Emphasis on basic pointe techniques and performance styles. Prerequisites: Dance 132A-B-C. May be taken for credit three times.

132A-B-C Studio Workshop in Ballet II (2-2-2) F, W, S, (132) Summer. Intermediate ballet: principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites for non-Dance majors: Dance 30A-B-C or audition. May be taken for credit twice. **(IX)**

133A-B-C Advanced Studio Workshop in Ballet III (2-2-2) F, W, S, (133) Summer. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 132A-B-C or audition. May be taken for credit twice.

134A-B-C Advanced Studio Workshop in Ballet IV (2-2-2) F, W, S, (134) Summer. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 133A-B-C with a grade of B^+ or better in 133C, or audition. May be repeated for credit.

135A-B-C Advanced Studio Workshop in Ballet V (2-2-2) F, W, S. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 134A-B-C with a grade of B^+ or better in 134C, or audition. May be taken for credit three times.

137 Repertory (2). Rehearsal and performance of repertoire from established ballet, modern, or jazz dance choreographers. Prerequisites: Dance 133A-B-C or 143A-B-C or consent of instructor. May be taken for credit twice.

139 Partnering (2). Principles of partnering techniques in various dance performance styles. Prerequisites: Dance 133A-B-C, Dance 143A-B-C, or by audition. May be taken for credit four times.

142A-B-C Studio Workshop in Modern II (2-2-2) F, W, S, (142) Summer. Intermediate modern tradition developed from Graham, Humphrey, and Wigman, incorporating the personal point of view of the instructor. Prerequisites for non-Dance majors: Dance 40A-B-C or audition. May be taken for credit twice. **(IX)**

143A-B-C Advanced Studio Workshop in Modern III (2-2-2) F, W, S, (143) Summer. Advanced modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman, incorporating the personal view of the instructor. Prerequisites: Dance 142A-B-C. May be taken for credit twice.

144A-B-C Advanced Studio Workshop in Modern IV (2-2-2) F, W, S. Advanced modern dance. In-depth study of styles, performance elements and principles of modern dance developed from Graham, Horton, Humphrey, Wigman, and current influences incorporating the personal view of the instructor. Prerequisite: Dance 143A-B-C or consent of instructor. May be taken for credit three times.

150A-B-C Studio Workshop in Tap II (2-2-2). Intermediate tap: principles of beginning tap continued and developed. Prerequisite: Dance 52A-B-C or consent of instructor. May be taken for credit twice.

151A-B-C Studio Workshop in Tap III (2-2-2). An overview of tap concentrating on the development of various technique forms using intermediate and advanced principles. Prerequisites: Dance 150A-B-C and consent of instructor. May be taken for credit twice.

152A-B-C Intermediate Studio Workshop in Jazz II (2-2-2) F, W, S. Intermediate jazz: principles of jazz dance and contemporary forms incorporating the personal views of the instructor. Prerequisites for non-Dance majors: Dance 50A-B-C. May be taken for credit twice. **(IX)**

153A-B-C Advanced Studio Workshop in Jazz III (2-2-2) F, W, S. Advanced jazz: principles of jazz dance and contemporary forms incorporating the personal views of the instructor. Prerequisites: Dance 152A-B-C. May be taken for credit twice.

154A-B-C Advanced Jazz: Performance Techniques IV (2-2-2) F, W, S. Advanced jazz emphasizing performance techniques. Prerequisites: Dance 153A-B-C. May be taken for credit twice.

***160 Improvisation* (2).** *Structured and experiential improvisation to heighten* the personal intuitive processes, the kinesthetic sense, spatial and temporal awareness, and to encourage insights into the potential movement resources of the individual for performance and choreography. Course encourages freedom of exploration. May be taken for credit two times.

162A-B-C Choreography II (4-4-4). Directed choreographic projects for stage or video integrating the elements of stagecraft. In process or completed works may be shown quarterly in public studio or stage performances. By audition only. Prerequisites: Dance 60A-B-C.

163 Dance and Video Technology (4). Introduction to video and audio documentation of dance performance. Integrating dance performance within the film aesthetic. Techniques and technologies of video cameras, formats, editing, and projection. Overview of video compression and DVD authoring. Prerequisite: Dance 60A or consent of instructor.

164 Screendance (4). Overview of dance for film and choreography for the camera. Aesthetics of creating dance for the screen. Approaches for delivery of dance films to an audience, including projection, DVD, Web, and mobile devices. A final dance film project is required. Prerequisite: Dance 163 or consent of instructor. Formerly Dance 164A.

165 Choreographic Projects (1 to 4) S. Supervised choreographic projects for workshop productions. By audition and approval of faculty. May be taken for credit twice.

170 Dance Performance (1 to 4). Rehearsal and performance in a faculty-choreographed production. By audition only. May be taken for credit twice.

171 Dance Workshop (1 to 4) F, W, S. Rehearsal and performance in a student-choreographed production. By audition only. May be taken for credit three times.

172 Master of Fine Arts Concert (1 to 4). Rehearsal and performance in a graduate student-choreographed production. By audition only. May be taken for credit three times.

174 UCI Dance Ensemble Performance (1 to 4). Performance with the UCI Dance Ensemble. Prerequisite: consent of instructor. May be taken for credit twice.

176 UCI Jazz Dance Ensemble (2 to 4). Rehearsal and performance experience in theatrical jazz dance, designed to provide an experience in assimilating various styles of jazz dance and in refining dance performance techniques. Students also master aspects of dance company promotion. Prerequisites: Dance 152A-B-C or consent of instructor. May be taken for credit six times.

177 UCI Spanish Dance Ensemble (1 to 4) F, W, S. Rehearsal and performance with the UCI Spanish Dance Ensemble. Flamenco and other Spanish dance genres are presented throughout the year for campus and off-campus events. Prerequisite: consent of instructor. May be taken for credit 12 times.

179 UCI Etude Ensemble (4) F, W, S. Repertory and performances by undergraduate Dance majors. Concert presentations on and off campus. Faculty directed, student/faculty choreographed. By audition only. May be taken for credit three times.

180A-B, C Laban Studies (4-4, 4) F, W, S. 180A: Elementary Labanotation and motif writing. Prerequisite: Dance 21A. **180B:** Intermediate Labanotation and work with Laban Writer software. Prerequisite: Dance 180A or consent of instructor. **180C:** Laban movement analysis. Prerequisite: Dance 21A.

185 Critical Issues in Dance (4). Critical thinking and writing about dance, with a section on dance criticism and a major emphasis on persuasive writing about significant issues in the dance world. Prerequisites: satisfactory completion of the lower-division writing requirement and Dance 90A-B-C.

193 Selected Topics in Dance (1 to 4). Directed group studies of topics in dance. May be repeated for credit when topic changes.

197 Independent Study (1 to 4) F, W, S. Individual independent projects in experimental laboratory, library, field, performance, under instructor's direction. Students can receive conceptual, creative, and theoretical instruction in the successful completion of a written report or performance. Prerequisite: consent of instructor. May be repeated for credit.

199 Senior Thesis (4) F, W, S. Directed research or creative activity for senior Dance majors. Research consists of a substantial essay on dance history, research in dance science, or the creation of original or reconstructed choreography. Pass/Not Pass only. May be repeated for credit.

GRADUATE

NOTE: Some courses are not offered every year. Please check with the department advisor.

201 Seminar in Kinesiology for Dance (4). Introduction to the anatomical, biomechanical, and physiological principles of dance movement. Prerequisite: Dance 100 or consent of instructor.

210 Graduate Studio: World Dance (2) F, W, S. Principles, techniques, and styles of selected genres of world dance such as those of Mexico, Spain, Japan, or other cultures. Prerequisite: consent of instructor. May be taken for credit six times.

222 Musical Resources (4). Detailed study of music as it relates to dance. Historical overview of musical form, style, and other elements. Analysis of various affinities between music and dance. Practical applications. Prerequisite: Dance 221 or consent of instructor.

225 Seminar in the Teaching of Dance Techniques (4). Principles and theories of teaching dance techniques. Supervised presentation and teaching of technique class.

231A-B-C Graduate Studio: Ballet (2-2-2) F, W, S. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. By audition only. May be repeated for credit.

241A-B-C Graduate Studio: Modern (2-2-2) F, W, S. Advanced modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman, incorporating the personal view of the instructor. By audition only. May be repeated for credit.

251A-B-C Graduate Studio: Jazz (2-2-2) F, W, S. Principles of jazz dance and contemporary forms, incorporating the personal views of the instructor. By audition only. May be repeated for credit.

252A-B-C Graduate Studio: Tap (2-2-2) F, W, S. An overview of tap concentrating on the development of various technique forms using basic and intermediate principles. May be taken for credit four times.

261A-B Graduate Seminar in Choreography (4-4) F, W. Graduate work in dance composition emphasizing the individual aesthetic. Assignments in movement discovery, solo and group forms, with the main emphasis on independent work. May be repeated for credit.

264 Screendance (4). Overview of dance for film and choreography for the camera. Aesthetics of creating dance for the screen. Approaches for delivery of dance films to an audience, including projection, DVD, Web, and mobile devices. A final dance film project is required. Prerequisite: Dance 281 or consent of instructor.

265 Performance Capture (4). Projects in performance capture, motion capture, motion tracking, and computer animation. Introduction to techniques for sensing and recording human movement and transforming the result into digital representations using computer technology. Discussion of aesthetic issues related to movement representation. Choreographic projects. Prerequisites: Dance 264 and 281, or consent of instructor.

276 CPAST Studio/Laboratory: Telematic Performance and Teleoperative Art (4) F, W, S. Art and performance projects utilizing real time and quasi-real time distance interaction. Synchronous performance and distributed choreography. Network technologies and protocols. Speed, bandwidth, latency. Web-based technologies. Video and sound. Teleoperation/remote machine control. Same as ICS 276.

281 Dance and Video Technology (4). Introduction to video and audio documentation of dance performance. Integrating dance performance within the film aesthetic. Techniques and technologies of video cameras, formats, editing, and projection. Overview of video compression and DVD authoring. Formerly Dance 281A.

282 Seminar in Movement Analysis (4). Theories of movement analysis and nonverbal communication applied to dance.

283 Critical Issues in Dance (4). Reading, writing, discussing, and presenting key issues that relate to dance studies. Basics of dance analysis and criticism. Special emphasis on effective ways of defining, clarifying, and arguing for points of view. Prerequisite: Dance 284.

284 Bibliography and Research (4). Understanding the field of dance studies, available resources, research methods, and academic formats in preparation for thesis writing.

285 Graduate Projects (4). Projects may be educational, choreographic, scientific, historical, or philosophical in scope and must have faculty advisor approval. May be taken for credit six times.

286 Thesis (4). Substantial research in a topic approved by the student's graduate committee. Results of the research must be written in approved thesis style. Prerequisite: consent of department. May be taken for credit six times.

287 Graduate Lectures in Dance (1 to 4). A series of lectures and discussions of announced topics in dance. Content may be from history, ethnology, notation, medicine, music, or other areas in the field. Prerequisite: consent of instructor. May be repeated for credit as topics change.

296 Proseminar in Dance History (4). Discussion seminar with emphasis on reading and thinking about problems in dance history; presentation of oral and written reports. Topics vary. May be taken for credit twice.

297 Directed Reading (1 to 4). Topic to be approved by instructor. Paper required. Prerequisite: consent of instructor. May be repeated for credit.

399 University Teaching (4). Limited to Teaching Assistants. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF DRAMA

249 Drama Building; (949) 824-6614
Eli Simon, **Department Chair**

Faculty

Lonnie Alcaraz, M.F.A. University of California, Irvine, *Associate Professor of Drama* (lighting design, digital imaging)
Stephen Barker, Ph.D. University of Arizona, *Professor of Drama and Head of Doctoral Studies* (post-modern theatre, Beckett, critical theory)
Cynthia Bassham, M.F.A. American Conservatory Theatre, *Lecturer with Potential Security of Employment, Drama* (voice, speech for actors, acting)
Richard Brestoff, M.F.A. New York University, *Associate Professor of Drama* (film and television acting)
Daniel Gary Busby, D.M.A. University of California, Los Angeles, *Assistant Professor of Drama* (music theatre, singing, conducting)
Luke Cantarella, M.F.A. Yale University, *Assistant Professor of Drama* (scene design)
Dennis Castellano, M.F.A. University of California, Irvine, *Senior Lecturer with Security of Employment and Head of Music Theatre* (music theatre)
Robert Cohen, D.F.A. Yale University, *Claire Trevor Professor of Drama* (acting theory, acting, directing)
Myrona DeLaney, Ed.D. University of California, Irvine, *Lecturer with Security of Employment, Drama* (music theatre, singing, acting)
Holly Poe Durbin, M.F.A. University of California, Los Angeles, *Associate Professor of Drama* (costume design)
Clifford Faulkner, M.A. California State University, Long Beach, *Senior Lecturer with Security of Employment, Drama* (scenery design, history of design, gay theatre)
Keith Fowler, D.F.A. Yale University, *Professor of Drama and Head of Directing* (directing, acting)
Clayton Garrison, Ph.D. Stanford University, *Professor Emeritus of Drama* (opera, musical theatre, movement, dramatic literature)
Douglas-Scott Goheen, Ph.D. University of Denver; M.F.A. Yale University, *Professor Emeritus of Drama* (scenery design, digital imaging)
Cameron Harvey, M.F.A. University of California, Irvine, *Professor Emeritus of Drama* (artistic direction, producing, lighting design)
Don Hill, M.F. A. University of Southern California, *Lecturer with Potential Security of Employment, Associate Producer, and Head of Stage Management* (stage management, directing, acting)
Michael Hooker, M.F.A. California Institute of the Arts, *Professor of Drama and Head of Design* (sound design)
Dudley Knight, M.F.A. Yale University, *Professor Emeritus of Drama* (voice, speech for actors, acting)
Madeline Ann Kozlowski, M.F.A. Brandeis University, *Professor Emerita of Drama* (costume design)
Anthony Kubiak, Ph.D. University of Wisconsin, Milwaukee, *Professor of Drama* (American and modern drama, modern poetry, critical theory, philosophy)
Daphne Pi-Wei Lei, Ph.D. Tufts University, *Associate Professor of Drama* (Asian theatre, Asian American theatre, intercultural theatre, gender theory, performance theory)
Annie Loui, *Professor of Drama* (movement, directing, acting)
David McDonald, Ph.D. Stanford University, *Professor Emeritus of Drama* (dramatic theory, Irish drama, theatre history, playwriting)
Ian Munro, Ph.D. Harvard University, *Associate Professor of Drama* (European drama and performance, early modern popular culture, theatrical performance of wit)
Vincent Olivieri, M.F.A. Yale University, *Assistant Professor of Drama* (sound design)
Janelle Reinelt, Ph.D. Stanford University, *Professor Emerita of Drama* (British theatre, political theory, performance)
Bryan Reynolds, Ph.D. Harvard University, *Professor of Drama* (Shakespeare, Renaissance drama, critical theory, feminist theory, performance theory, cultural studies)
Eli Simon, M.F.A. Brandeis University, *Department Chair and Professor of Drama* (acting, directing)
Jaymi Lee Smith, B.F.A. DePaul University, *Assistant Professor of Drama* (lighting design)
Phil Thompson, M.F.A. University of California, Irvine, *Associate Professor of Drama and Head of Acting* (voice, speech for actors, acting)
Richard Triplett, Otis Art Institute, *Professor Emeritus of Drama* (scenery and costume design, history of design)
Christopher Villa, *Lecturer in Drama* (stage combat)
Robert Weimann, Ph.D. Humbolt University, *Professor Emeritus of Drama* (theory, criticism, literature)
Frank B. Wilderson III, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and Drama* (film theory, Marxism, dramaturgy, black political theory)
Shigeru Yaji, M.F.A. California State University, Long Beach, *Lecturer in Drama* (costume design)

The Bachelor of Arts program in Drama combines broad liberal study and comprehensive training in several subdisciplines of drama. Each Drama major studies and practices in each of several mutually related areas of the theatre: performance, literature, history, criticism, design, stage management, and production. The curriculum is structured to relate studio practices, technical resources, and production techniques to the development of dramatic literature and current critical theory.

Students should especially note the division of upper-level literature courses into the following clusters—Theory and Criticism (103–109), Periods and Genre (110–119), and Performance and Culture (121–129). These clusters describe differing approaches to the material being presented, whether, for example, analysis and discussion is weighted toward a more strictly defined theoretical and philosophical context, a more traditional historical approach, or an approach that more emphasizes cultural frameworks and issues.

The program is designed for students who, while not necessarily planning to make the theatre their vocation, have a serious interest in the literature, theory, and practice of drama, as well as for students preparing to work professionally in the theatre, often after more specialized training at the graduate level.

The Drama Department also offers a specialized degree for students showing professional aptitude for a career as a musical theatre performer. The Bachelor of Fine Arts (B.F.A) in Music Theatre offers the Department's most talented and motivated students the opportunity to train in acting, singing, and dancing for the stage. Students who begin their tenure at UCI as a freshman Drama major may audition for the program after their first year of residence. Transfer students may audition as early as their second quarter of residence. B.F.A. students are given priority when enrolling in all music theatre courses. In most cases, students can audition for the B.F.A program once they have been accepted into the Music Theatre Workshop, Level III (Drama 143). All B.F.A. hopefuls are encouraged to audition for the Music Theatre Workshop, Level II (Drama 142) as soon as they arrive at UCI as Level II is a prerequisite to Level III. B.F.A. auditions are held three times per year: during Welcome Week and finals week of fall and winter quarters. A grade point average of 3.0 in musical theatre courses completed prior to the B.F.A. audition is required. Successful graduating seniors in the B.F.A. program will receive the "Honors in Music Theatre" notation on their official transcript if they maintain an overall GPA of 3.2 or higher with an overall GPA of 3.4 or higher in all musical theatre courses.

The Department of Drama is a member of the University/Resident Theatre Association (U/RTA).

CAREERS FOR THE DRAMA MAJOR

A degree in Drama may or may not lead to professional employment in theatre or film.

Graduates in Drama at UCI have performed in Broadway plays, regional and summer theatres, and in films and television. They serve as artistic directors, designers, art directors, business managers, and performers at more than 100 theatre companies, and as faculty at more than 75 institutions of higher learning.

Not all Drama students become professional theatre artists. Many embark upon careers in law, business, arts management, advertising, and teaching; others pursue further study at UCI or elsewhere.

REQUIREMENTS FOR THE B.A. DEGREE IN DRAMA

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements for the Major

An introductory course in production theory (Drama 10); Performance Now (Drama 15); one year in acting (Drama 30A-B-C); one year survey in the development of drama (Drama 40A, B, C); three different courses chosen from Drama 50A, B, C, D, E; one year in the development of theatre (Drama 120A, B, C); in addition to the Drama 120 series, four more upper-division courses, which must include three courses from Drama 103–129; eight units of theatre production (Drama 101) of which four units must be completed during the first year of residence at UCI.

Students are strongly encouraged to take Performance Now (Drama 15) during their first year of residency at UCI.

Students are required to take Drama 40A, B, C in their sophomore year, after completion of the lower-division writing requirement.

Students entering the Department as freshman must complete the requirement of three courses chosen from Drama 50A, B, C, D, E by the end of their junior year. All other students must complete these courses within one year of entering the major.

Sample Program for Freshmen

Fall	Winter	Spring
Drama 30A	Drama 30B	Drama 30C
Drama 10	Drama 15	Drama 50
Drama 101 (2 units)	Drama 101 (2 units)	General Education
Writing 39B	Writing 39C	General Education

REQUIREMENTS FOR THE B.F.A. DEGREE IN MUSIC THEATRE

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements for the Major

Introduction to Production Theory (Drama 10); Performance Now (Drama 15); Acting (Drama 30A-B-C); Development of Drama (Drama 40A, B, C); one of the following courses: Introduction to Costume Design (Drama 50A), Introduction to Scenic Design (Drama 50B), Introduction to Lighting Design (Drama 50C), Introduction to Sound Design (Drama 50D), or Introduction to Stage Management (Drama 50E); University Theatre (a musical production) (Drama 100); eight units of Theatre Production (Drama 101); one Dramatic Literature course chosen from Drama 103–109, 110–119, or 121–129; Development of Theatre (Drama 120A, B, C); Music Theatre Acting (Drama 136), Music Theatre Workshop, Level II (Drama 142); Music Theatre Workshop, Level III (Drama 143A, B, C); Music Theatre Workshop, Level IV (Drama 144); Music Theatre Singing (taken three times) (Drama 145); The New York Satellite Program (Drama 146A-B); Music Theatre Dance (Drama 147); History of the American Musical Theatre (Drama 148A, B, C); Music Proficiency for Actors (Drama 149); Script and Score (Drama 176); Song Repertoire (Drama 177); plus each of the following courses when in residence in the New York Satellite Program: Studio in Acting (Drama 190), Project in Voice (Drama 199), Theatre Dance in Ballet, Tap, and Jazz (Drama 199); plus two ballet classes, one tap class, and one jazz class in Dance.

Application Process to Declare the Major: Students who begin their tenure at UCI as a freshman Drama major may audition for the program after their first year of residence. Transfer students may audition as early as their second quarter of residence.

DEPARTMENTAL HONORS PROGRAMS

Honors in Acting Program

Admission to the Honors in Acting Program requires both eligibility and a special audition. The eligibility requirements for sophomore-level transfer students and native UCI students are (1) at least one year in good standing as a UCI Drama major; (2) completion of Drama 130 and at least one section of either Drama 135 or Drama 142, all at UCI; (3) honors students must possess and maintain an overall GPA of at least 3.2, with a GPA of 3.4 or higher in all acting courses; (4) performance in at least three official UCI productions; (5) completion of all Drama 101 (Theatre Production) assignments; and (6) completion of the eligibility form.

The eligibility requirements for junior-level transfer students are (1) one year in good standing as a UCI Drama major; (2) completion of Drama 130 at UCI; (3) honors students must possess and maintain an overall GPA of at least 3.2, with a GPA of 3.4 or higher in all acting courses; (4) completed performance in at least one official UCI production; (5) completion of four out of eight units of Drama 101; and (6) completion of eligibility form.

A student's audition will determine final admission to the Honors in Acting program. Only truly exceptional students, no more than 10 to 20 percent of those eligible, will be admitted. The Honors auditions, for eligible candidates only, are held at the end of fall quarter and by special arrangement. Auditions will consist of a standard presentation.

Honors in Acting Program students receive (1) the "Honors in Acting" notation on their official transcript; (2) nomination and recommendation for national University/Resident Theatre Association (U/RTA) auditions; (3) eligibility, on a space available basis, for South Coast Repertory Theatre internships, currently available only to M.F.A. students; and (4) eligibility to audition at UCI-screened Shakespearean Festivals.

Honors in Design Program

The Honors in Design Program provides the opportunity for Drama majors to concentrate on the study and practice of scenery, costume, lighting, or sound design. Honors in Design students study basic and advanced design techniques, participate in classes with graduate design students, serve as an assistant designer to a graduate student or faculty designer, and possibly design a production at UCI.

Eligibility requirements are (1) at least one year in good standing at UCI as a Drama major; (2) completion of Drama 50A, B, C, D or equivalent courses; (3) completion of at least two upper-division studio courses selected from Drama 150–162, 167–169, 171, 179, or graduate-level design courses, including at least one from the design area in which the student is applying for honors; (4) possess and maintain an overall GPA of at least 3.2, with a GPA of 3.4 or higher in all design and production technique courses; (5) completion of four out of eight units of Drama 101 (Theatre Production); and (6) completion of the eligibility form.

Admission to the Honors in Design Program is competitive. Students may be admitted as early as the winter quarter of their sophomore year but no later than the fall quarter of their senior year. Upon completion of eligibility requirements, the student will schedule an informal portfolio review with a member of the design faculty appropriate to the student's specialty area(s).

If the faculty mentor determines that the student is a good candidate for the Honors in Design Program, the mentor will present the student's portfolio to the Design Faculty. The Design Faculty, led by the Head of Design, will then decide if the student shall be admitted to the Honors in Design Program.

Honors in Design students receive (1) the "Honors in Design" notation on their official transcript; (2) an assistant designer

assignment with a graduate student or faculty designer; and (3) special consideration to design a budgeted and technically supported production. Honors in Design students may also receive nomination and recommendation for national University/Resident Theatre Association (U/RTA) interviews.

Honors candidates meet with their faculty mentor at the beginning of every quarter to evaluate their progress and with the Head of Design to check that all grade and course requirements are being satisfied. Students who fail to meet these requirements will lose their Honors in Design status, and may have to re-apply to the Program.

Honors in Directing Program

The Honors in Directing Program provides the opportunity for Drama majors to concentrate on the study and practice of stage direction. Honors in Directing students study basic and advanced directing techniques, participate in the Directing Laboratory with graduate Directing students, take a course in directorial themes and/or the history of directing, and direct two full plays in the Drama Workshop series. Honors students also have the opportunity to receive credit as the assistant director of a Stage 1 or Stage 2 Department show; as a production internship with a professional theatre company; or for production/direction responsibility with the Playwright's Workshop.

Admission to the Honors in Directing Program is competitive. Candidates must first complete Drama 184 (Directing) and receive instructor approval to enroll in Drama 185 (Advanced Directing). Candidates must apply, as a director, for Drama 198 (Drama Workshop) by submitting a proposal to direct a play in the Drama Workshop series. If the proposal is accepted, the candidate must declare to the Head of Directing that the production is to be counted as an audition for admission to the Honors in Directing Program. A committee of three Drama faculty members, including the Head of Directing, will then see and evaluate the production for clarity of interpretation, unity of style, strength of acting, and ensemble performance, and will examine the candidate's self-evaluation and the evaluations of the director by members of the cast. The Head of Directing will inform the candidate of the committee's decision as to whether or not the candidate is admitted to the Honors Program.

Undergraduate Drama majors can be admitted into the program as early as the winter quarter of their freshman year but no later than the spring quarter of their junior year. Students may be admitted to the program retroactively if all the requirements for Directing Honors have been met by their final year, but only if a faculty committee of three has seen their workshops and agrees to admit the candidate.

To achieve the Honors in Directing distinction, students must fulfill all the courses required of the regular Drama major, with an overall GPA of 3.2 or higher. In addition, students must complete the following courses with a GPA of 3.4 or higher:

1. Drama 184 (Directing).
2. Two courses in Drama 185 (Advanced Directing). In this course, undergraduate Directing students present work in the Directing Laboratory along with graduate Directing students.
3. Two Drama Workshops, one of which must be taken as Drama 198 (Drama Workshop) with the candidate serving as director. The candidate must stage a second Drama Workshop as Drama 199 (Projects in Theater), for which a letter grade is earned.
4. Four additional units to be satisfied by any of the following: Drama 199 (as a summer internship, approved by the Head of Directing, with the candidate serving a professional theatre company as director, assistant director, or production assistant); Drama 199 (as a production/directing project for Playwright's Workshop); Drama 100 (as assistant director to a faculty director); or Drama 199 (as assistant director to a graduate director's thesis production).

Honors candidates meet with the Head of Directing at the beginning of every quarter to evaluate their progress and to check that all grade and course requirements are being satisfied. Successful graduating seniors will receive the "Honors in Directing" notation on their official transcript and will receive a nomination and recommendation for national University/Resident Theatre Association (U/RTA) interviews.

NOTE: All of the above courses are open to all students even though they may not qualify for the Honors Program.

Honors in Dramatic Literature, History, and Theory Program

The Honors in Dramatic Literature, History, and Theory Program is designed to challenge superior students beyond the scholarly requirements of the Drama major. It provides them with the opportunity to advance their knowledge of dramatic literature, history, and theory and to further develop their writing, analytical, and research skills. An additional purpose of the program is to better prepare students for graduate study in not only dramatic literature, history, and theory, but in all fields in the humanities and social sciences, as well as in law.

Eligibility requirements are (1) completion of Drama 40A, B, C and two courses selected from Drama 103–129 (for upper-division writing credit), or equivalents to these courses from other institutions; (2) possess and maintain an overall GPA of at least 3.2, with a GPA of 3.4 or higher in all dramatic literature, history, and theory courses; and (3) completion of the eligibility form.

Admission to the Honors in Dramatic Literature, History, and Theory Program is competitive. Students must apply to the program prior to the spring quarter of their junior year. Upon completion of eligibility requirements, applicants must submit at least two critical essays, most likely written previously for courses, totaling no more than 30 pages. These essays will be used by the Honors Committee (comprised of the Head of Dramatic Literature, History, and Theory and two additional members of the Drama faculty) to determine admission. Only truly exceptional students (no more than 10 to 20 percent of those eligible) will be admitted.

Beyond fulfilling the regular requirements of the Drama major, honors students must take three additional upper-division courses in dramatic literature, history, and/or theory, one of which must be focused on theory. Upper-division courses in other departments may be used to fulfill these requirements, as long as the Honors Committee approves them.

Honors students must also write an honors thesis, a 30–40 page research paper written under the supervision of a faculty member on a topic chosen by the student. In consultation with the student, the adviser for this project is selected before the end of the fall quarter of the student's senior year. Students develop their projects until the spring quarter when they enter the writing phase. It is only during the spring quarter that students achieve full course credit for their work on the thesis, in the form of an independent study course with their advisor. This independent study is the final course of the program.

Successful graduating seniors will receive the "Honors in Dramatic Literature, History, and Theory" notation on their official transcript.

Honors in Music Theatre

Successful graduating seniors in the B.F.A. program will receive the "Honors in Music Theatre" notation on their official transcript if they maintain an overall GPA of 3.2 or higher with an overall GPA of 3.4 or higher in all music theatre courses.

Honors in Stage Management Program

The Honors in Stage Management Program provides the opportunity for Drama majors to concentrate on the study and practice of stage management. Honors students study basic and advanced

stage management techniques, participate in classes with graduate stage managers, work as assistant stage managers with the graduate stage managers on graduate student-directed and faculty-directed productions, and stage manage a graduate student-directed or faculty-directed production at UCI.

Eligibility requirements are (1) minimum one year in good standing at UCI as a Drama major; (2) completion of three of the following: Drama 50A, B, C, D or equivalent courses; (3) completion of Drama 50E; (4) possess and maintain an overall GPA of at least 3.2, with a GPA of 3.4 or higher in all stage management and production courses; (5) completion of eight units of Drama 101 (Theatre Production); and (6) completion of the eligibility form.

Admission to the Honors in Stage Management Program is competitive. Students may be admitted as early as the winter quarter of their sophomore year but no later than the spring quarter of their junior year. Only truly exceptional students (no more than 10 to 20 percent of those eligible) will be admitted to the program as determined by the Honors Committee. Upon completion of eligibility requirements, the student will submit to the Honors Committee: (1) two prompt books; (2) a resume including all stage management and production experience; (3) letters of reference from two directors with whom the student has worked; and (4) a written paper on the subject of stage management.

Students receive the "Honors in Stage Management" notation on their final transcript; nomination and recommendation for national University/Resident Theatre Association (U/RTA) interviews; assistant stage manager assignments working with graduate stage managers; and a stage management assignment on a graduate student-directed or faculty-directed production.

Honors candidates meet with the Head of Stage Management at the beginning of every quarter to evaluate their progress.

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Drama, with emphasis in Acting, Directing, Design, or Stage Management.

A graduate emphasis in Feminist Studies also is available. Refer to the Department of Women's Studies section of the *Catalogue* for information.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A., B.F.A., or higher degree.

Applicants must submit dossiers of biographical information and theatrical experience, together with photographs, essays, reviews, production books, and portfolios, as appropriate.

Normally an audition is required for all applicants who intend to follow the curriculum in Acting. UCI coordinates its auditions with the University/Resident Theatre Association (U/RTA), and conducts auditions, both for U/RTA finalists and UCI applicants, in New York, Chicago, Las Vegas, and Irvine during January and February. Other U/RTA audition sites may be considered. Interviews for applicants in Directing, in Design, and in Stage Management also are required.

General Degree Requirements

Normally three years of residence is required. Each candidate must enroll for three courses each quarter for nine quarters, exclusive of summer sessions.

The normative time to degree for students in the M.F.A. program is three years. Residence is required. The maximum time to degree can be extended to four years only through petition to the Head of the Program for extenuating circumstances. Students who do not complete the degree in four years will be dropped from the program.

During the first year of residence each candidate will prepare, for credit, two graduate projects, in either acting, directing, design, stage management, theatrical research, or a combination of two of these. Satisfactory completion of these projects, as determined by the faculty, is prerequisite to entering the second year of the program.

The required thesis normally consists of directing, designing, stage managing, or playing a principal role in a major production, and collecting in essay form the evidences of research, analysis, and judgments which formed a part of the production experience.

Each graduate student is expected to participate in productions throughout residence at UCI.

A total of 108 quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B in each course. Specific course requirements must be satisfied in one of the following four areas:

Acting

Nine graduate studios in acting (Drama 200), taken in tandem with nine graduate studios in voice (Drama 201), stage speech (Drama 202), stage movement (Drama 203) or dance (Dance 231, 241, 251, 150, or 151), and Voice/Movement Dynamics (Drama 206); three master classes in acting (selected from various topics offered in Drama 219); one seminar in script analysis and research (Drama 235); three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two seminars in dramatic literature, performance theory, criticism, history of theatre, or contemporary theatre (Drama 220–225, or 230); six graduate projects, of which two may be professional internships (Drama 240 or 295).

Design

Nine graduate studios in design, one of which is the thesis (Drama 255); seven courses in graduate projects, one of which may be a professional internship (Drama 295); two elective courses; three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two courses in production techniques (Drama 150–162, 167–171, 260–280); one course in conceptualization and collaboration (Drama 245, must be taken the first quarter in residence); one seminar in script analysis and research (Drama 235); two courses in dramatic literature, performance theory, criticism, contemporary theatre, or history of music theatre (Drama 220, 221, 223, 230, or 248).

Directing

Nine graduate studios in directing (Drama 211); three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two courses in acting (Drama 200); one seminar in script analysis and research (Drama 235); one course in conceptualization and collaboration (Drama 245); two seminars in dramatic literature, performance theory, criticism, theatre history (Drama 220–223, 248); seven projects, of which one is the thesis, one is a project in theatre production, one may be a professional internship, and three must be directed (non-thesis) productions; two or three electives.

Stage Management

Seven graduate studios in stage management (Drama 254); one thesis project course (Drama 257E); seven courses in graduate projects (Drama 240); one professional internship course (Drama 295); two elective courses in graduate level (Drama 200+) or upper-division (100–199) as approved by the faculty advisor; three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's

prior academic experience; two courses in production techniques (Drama 150–159, 162–164, 167–168, 170–171, 260–262, 265–266); one course in conceptualization and collaboration (Drama 245, must be taken the first quarter in residence); one seminar in script analysis and research (Drama 235); two courses in dramatic literature, criticism, contemporary theatre, or history of music theatre (Drama 220, 221, 230, or 248).

DOCTORAL DEGREE PROGRAM

Degree Offered

Ph.D. in Drama and Theatre.

This is a joint program offered by the UCI Department of Drama and the UCSD Department of Theatre and Dance.

Preparation

Students with a B.A. (minimum GPA of 3.5), M.A., or M.F.A. degree in Drama and Theatre are eligible for admission to the doctoral program. Students with training in literature (or another area in the humanities) will also be considered, provided they can demonstrate a background in drama or theatre. Experience in one of the creative activities of theatre (acting, directing, playwriting, design, dramaturgy) enhances a student's chances of admission.

All applicants are required to take the Graduate Record Examination and to submit samples of their critical writing.

While not required for admission, a working knowledge of a second language is highly desirable (see Language Requirement).

Course of Study

Students are required to take a minimum of 144 units, which is equivalent to four years of full-time study (full-time students must enroll for a minimum of 12 units each quarter). Forty of these units are taken in required seminars; the balance is made up of elective seminars, independent study and research projects (including preparing the three qualifying papers), and dissertation research. Students must take a minimum of one seminar per year in the UCSD Department of Theatre and Dance. The program of study makes it possible for students to take a significant number of elective courses and independent studies both with faculty in Drama and Theatre and in other departments.

Required Courses

Students must take a minimum of 12 units (three seminars) each of Drama 290 (Dramatic Literature and Theatre History Prior to 1900) and 291 (Dramatic Literature and Theatre History, 1900 to Present), and 16 units (four seminars) of 292 (Cultural and Critical Theory).

All graduate courses may be repeated when the topic varies. Descriptions of the topics to be treated in a given academic year are published by the Department in the fall. Enrollment in each course requires the consent of the instructor. The courses are limited to registered doctoral students.

These 10 required seminars must be completed by all students, including those who have an M.A. or an M.F.A. degree, before the end of the third year. In addition, students must pass comprehensive examinations at the end of their first and second years.

Drama 293 (Directed Studies) and 294 (Dissertation Research) are also required.

Comprehensive Examinations

In the first year, students prepare for the Written Comprehensive Examination, which is based on a reading list of approximately 150 titles ranging from the Ancient Greeks to the present. Students take this examination at the beginning of the fall quarter of their second year. (Comprehensive examinations are scheduled at the beginning of fall quarter in order to allow students the summer to prepare.) Students who fail the Written Comprehensive may retake it no later than the first week of winter quarter of their second year. Students who fail the Written Comprehensive for a second time are dismissed from the program.

In their second year, students prepare for the Oral Comprehensive Examination. The reading list for this examination is designed to permit students to acquire a knowledge of their dissertation subject area, broadly conceived. The reading list is compiled by the student and the dissertation advisor, in consultation with other members of the faculty, as appropriate; the reading list must be established by the end of winter quarter of the second year. Students take the Oral Comprehensive at the beginning of the fall quarter of their third year. Students also submit a dissertation prospectus (approximately five pages) when they take this examination. Students who fail the Oral Comprehensive may retake it no later than the first week of winter quarter of their third year. Students who fail the Oral Comprehensive for a second time are dismissed from the program.

Advancement to Candidacy: Three Qualifying Papers

Students normally select a dissertation advisor during their second year and must do so before the end of spring quarter of that year. In consultation with the dissertation advisor and other faculty members, students develop topics for three qualifying papers, which are written during their third year. The three qualifying papers—one long (approximately 50 pages) and two short (approximately 30 pages each)—must be completed by the end of the third year; these completed papers provide the basis for the Oral Qualifying Examination. Students write the long paper under the direction of their dissertation advisor; it is understood that the long paper is preparatory to the dissertation. The short papers deal with other related topics, subject to the approval of the student's advisors; the two short papers are understood as engaging in exploring the larger contexts of the dissertation. The normative time for students to pass the Qualifying Examination and advance to candidacy is at the end of their third year; students must advance to candidacy no later than the end of fall quarter of their fourth year. Once advanced to candidacy, students write their dissertation which, upon completion, is defended in a final oral examination.

Students may select a dissertation advisor from either the UCI Department of Drama or the UCSD Department of Theatre and Dance. All UCI doctoral dissertation committees must include at least one faculty member from UCSD.

Language Requirement

Students are required to complete an advanced research project using primary and secondary material in a second language (materials may include live and/or recorded performance; interviews with artists, critics, and scholars; and other non-documentary sources, as well as more conventional textual sources). This requirement may be satisfied by writing a seminar paper or a qualifying paper (see Advancement to Candidacy above) that makes extensive use of materials in a second language. The second-language requirement must be satisfied before the end of the third year. This requirement will not be waived for students who are bi- or multilingual; all students are required to do research-level work in more than one language.

It is assumed that students will have acquired a second language before entering the doctoral program, although second-language proficiency is not a requirement for admission. While students may study one or more second languages while at UCI or UCSD, language courses may not be counted toward doctoral program requirements.

Teaching

Students are required to teach a minimum of four quarters. No more than eight units of apprentice teaching may be counted toward the required 144 units.

Departmental Ph.D. Time-Limit Policies

Students must advance to candidacy by the end of the fall quarter of their fourth year. Departmental normative time for completion of the degree is five years; total registered time in the Ph.D. program at UCI or UCSD cannot exceed seven years.

Financial Support

Ph.D. students entering the program with a B.A. may be supported (either by teaching assignments or fellowships) for five years. Students who have an M.A. and have been given transfer credit may be supported for four years. Such support depends upon the funds available, the number of students eligible, and the student's rate of progress.

Courses in Drama

(Schedule of Classes **designation: Drama)**

LOWER-DIVISION

10 Introduction to Production Theory (4). An introduction to modern production techniques as practiced in realizing scenic designs. Equipment, theories, techniques, and history of production practices in the technical theatre; class instruction integrated with practical applications.

14 Performing Rock 'n Roll (4). Explores major movements in the history of rock 'n roll in terms of performance, not virtuosity necessarily of the performers as musicians, rather as performances of aesthetics in modes of embodied ideology, iconoclastic spectacle, mixed media fashion, and subcultural formation.

15 Performance Now (4). Exposes students to what is most current in the world of performance and theatre. Begins with a series of lectures on the idea of performance, and the various theories that frame it. **(IV)**

30A-B-C Acting (4-4-4). A one-year course in basic acting technique and discipline. (NOTE: All acting classes require strict adherence to stage discipline; unexcused class absences, for example, are not permitted.) **30A:** Stage technique and stage discipline. Freeing vocal and physical movement and liberating emotional power. Elementary stage movement and voice. Elimination of regionalisms in speech. Overcoming stage fright. Readings in acting theory. **30B:** Improvisations and scenes. Rehearsal and presentation of at least two scenes with different partners. Developing stage contact with tactics in a "play" situation. Prerequisite: Drama 30A. **30C:** Characterization, scenes and auditioning. Development of character in at least three rehearsed scenes from different plays. Script analysis and performance technique. Preparation of audition pieces. The profession of acting. Prerequisites: Drama 30A-B. May be taken for credit twice. **(IX)**

34 Movement for Actors (4). Introduces the basics of stage movement for actors: the theory and practical application of physical relaxation, centering, focus, and balance. The body is trained to express a wide range of creative impulses for performance. May be taken for credit three times.

35 Speech for the Theatre (4). A course aimed at (1) improving natural, clear, unaffected speech and (2) eliminating negative habits and regional accents: exercises for physical tension, vocal support, tone production, vocal quality, and articulation. Open only to Arts majors. May be repeated for credit.

40A, B, C Development of Drama (4, 4, 4). A one-year lecture-discussion course (each quarter may be taken independently) in the development of Western Drama, concentrating on the drama's intellectual, social, and artistic foundations. About 10 plays and supplementary critical material are read each quarter. **40A:** Greek Drama through Shakespeare. Readings from Aeschylus, Sophocles, Euripides, Aristophanes, Marlowe, Shakespeare, and the anonymous playwrights of the medieval theatre. **40B:** Restoration Drama through Ibsen. Readings from Neoclassic, Romantic, and Naturalistic European playwrights in the eighteenth and nineteenth centuries. Molière, Racine, Congreve, Goethe, Ibsen, and Chekhov are included. **40C:** Contemporary Drama. Post Naturalistic theatre: Expressionism, Epic Theatre, Theatre of the Absurd, and Contemporary American Theatre. Among the playwrights studied are Stein, Shaw, Pirandello, Ionesco, Beckett, Williams, Brecht, Weiss, Albee, Churchill, and Duras. Same as Comparative Literature CL 40A, B, C. **(IV, VIII)**

50A Introduction to Costume Design (4). An introduction to the process and procedures employed by the costume designer for the theatre. The elements of design are discussed in the context of character development, historical period, and style. Exercises extend to drawing, rendering, and investigation of human proportions.

50B Introduction to Scenic Design (4). Introduction to the principles and practice of scenic design. Weekly problems include research into various periods and styles of production with an emphasis on the conceptual idea. Perspective drawing, rendering, and model building are covered in studio exercises and assignments. Prerequisite: Drama 10.

50C Introduction to Lighting Design (4). Introduction to the principles, theories, and equipment employed by the lighting designer for the stage. Areas of investigation include history, technology, and script analysis. Detailed studio attention is given to the theory and practice of design.

50D Introduction to Sound Design (4). Principles, theories, equipment use, and terminology employed by the sound designer for the stage. Areas of study include history, technology, and script analysis. Focuses on the theory and practice of design.

50E Introduction to Stage Management (4). A basic study of theatrical, dance, and opera stage management practices, forms, and methods, from first script reading to closing night. Opportunity to observe professionals at work in regional and touring situations as available. Formerly Drama 63.

65 Music Theatre Workshop I (2) F, W. For students new to singing or musical theatre. Basic vocal technique, characterization, and physicalization of music and lyrics introduced. May be taken for credit three times.

83 Directorial Techniques (4). Exercises introduce students to standard directorial practices for shaping a play, such as table work, blocking, business, and actor coaching. Students take charge of sample rehearsals, guiding casts through exercises, followed by peer review, and instructor critique. Prerequisites: Drama 30A-B-C.

UPPER-DIVISION

100 University Theatre (4). Rehearsal and performance in a faculty-directed production. By audition only. May be repeated for credit.

101 Theatre Production. The production courses are offered to give students the opportunity to participate in departmental productions. Students engage in the production and construction of designed work as well as its applied execution during performance. Prerequisite: consent of instructor. May be taken for credit for a maximum of 24 units provided productions change.

101A Theatre Production: Costume (1 to 6)

101B Theatre Production: Scenic (1 to 6)

101C Theatre Production: Lighting (1 to 6)

101D Theatre Production: Stage Management (1 to 8)

101E Theatre Production: Audio (1 to 6)

101S Theatre Production: Theatre Management (1 to 6)

103–109: THEORY AND CRITICISM

103 Lectures in Dramatic Literature (4). Courses include Medieval and Tudor Drama, Elizabethan and Jacobean Drama, Shakespeare, Restoration and Eighteenth-Century Drama, Modern British Drama, Modern American Drama, Tragedy, and Comedy. Prerequisite when offered for upper-division writing: satisfactory completion of the lower-division writing requirement. May be repeated, provided topic changes.

105 Introduction to Theory and Criticism (4). Discusses the approaches and methodologies of critical and performance theory. Students are introduced to major figures in the field of philosophical and theoretical discourse. Prerequisite: satisfactory completion of the lower-division writing requirement.

109 Special Topics in Theory and Criticism (4). Discussion of recent major trends and ideas in critical theory, concentrating on in-depth readings and lectures in particular facets of theory and criticism: Derrida, Butler, Lacan, Deleuze, and others. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

110–119: PERIODS AND GENRES

110 Special Topics in Classical Dramas (4). Designed to introduce students to various classical traditions—early Greek and Roman theatres, to be sure, but also, by way of comparison, the classical traditions of non-European cultures. Prerequisites: Drama 40A, B, C and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

112 Special Topics in Early Modern and Neoclassical Theatre (4). Investigates aspects of European theatre and culture in the sixteenth, seventeenth, and eighteenth centuries; individual courses may focus on specific topics within this broad expanse. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

116 Special Topics in Nineteenth-Century Dramas (4). Looks at the various trends and conventions of theatres in the nineteenth century, both Euro-American and beyond, paying special attention to the culture and political milieu within which these various traditions appeared. Prerequisites: Drama 40A, B, C and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

118 Special Topics in Modern and Contemporary Drama (4). An investigation into the many forms and permutations of modern (1880–1945), and contemporary (since 1945) drama, paying special attention to the historical and philosophical interpretations of text and performance. Prerequisites: Drama 40A, B, C and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

120A, B, C Development of Theatre (4, 4, 4). A one-year lecture course concentrating on the development of world theatre from a visual point of view, from the earliest storytelling rituals through international stage development to contemporary theatrical forms. Prerequisite or corequisite: Drama 40A, B, C. **(VIII)**

121–129: PERFORMANCE AND CULTURE

121 *Introduction to* Asian Theatre (4) W. An introduction to some of the major traditional theatrical forms and dramatic texts from India, China, and Japan. Other than dramatic texts (in English translation), attention is also paid to theory, history, and performance styles of traditional Asian theatre.

122 Asian American Theatre (4). An introduction to the history and development of Asian American theatre and drama. Besides play analysis, special attention is also paid to the history and politics of Asian American identity and experience, as well as to aspects of theatrical performance. Prerequisites: Drama 40A, B, C and 120A, B, C.

123 Multicultural Theatres (4). A study of the history, culture, aesthetics, and literature of various traditional performing arts and their connections to the contemporary multicultural society. May be repeated for credit as topics vary.

126 African American Film and Drama (4). A critical investigation of films and plays written by African Americans, with emphasis on dramaturgical and cinematic strategies, individual and collective representation, and the legacy of African American political struggle. Prerequisite: satisfactory completion of the lower-division writing requirement.

129 Advanced Topics in Performance (4). Addresses particular issues in theatre and performance that typically lie outside of regular course offerings. May address such issues as the theatre of the Avant Garde, performing gender, transversality and performance, body art, installation and performance art, among other possible topics. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

130 Intermediate Acting (4). Rehearsal and presentation of scenes from contemporary material. Focus on connection with scene partner, playing actions, and text analysis. Introduction to the credibility and theatricality of characterization and style. Prerequisites: Drama 30A-B-C with an average grade of B or better; for transfer students: one year of beginning acting with an average grade of B or better. May be taken for credit twice. Formerly Drama 130A.

132A-B-C Writing for Performance (4-4-4). 132A: Completion of a full-length play or its equivalent; discussion of student writing and of relevant literary texts. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. Formerly Drama 132. **132B:** Development of student work beyond what is normally produced in Drama 132A. The goal is to produce a polished, high-quality, stage-ready work through workshop exercises, revision, and rewriting. Prerequisites: Drama 132A, portfolio, and consent of instructor. **132C:** The goal is to produce work previously written in Drama 132A-B, under the supervision of instructor. Students, working under "real-life" conditions, may not rely on departmental resources to produce their work. Prerequisites: Drama 132B, portfolio, and consent of instructor.

135 Master Classes in Acting (1 to 4). Advanced acting in specialized areas including acting for the camera: situation comedy, commercials; auditioning and industry preparation; Shakespeare; Molière; Chekov; improvisation; advanced movement and voice and speech for the actor; self-starting; stage combat; repertory acting, singing; comedy; clowning; and masks. Prerequisites: grade of B or better in Drama 130 (or Drama 130A) and consent of instructor. May be repeated for credit as topics vary.

136 Music Theatre Acting (4) F. An acting class exclusive to the students in the B.F.A. in Music Theatre program. Prerequisites: Drama 30A-B-C.

142 Music Theatre Workshop II (4) F, W, S. A workshop in audition technique and song interpretation. Admission by audition only. May be taken for credit six times.

143A, B, C Music Theatre Workshop III (4, 4, 4) F, W, S. Scene study and song repertoire examined by era for the advanced music theatre student. **143A:** 1900s–1930s: operetta, revue, and musical comedy. **143B:** 1940s–1960s: book musicals. **143C:** 1970s–present: new forms and Broadway opera. Prerequisites: Drama 142 and audition. May be taken for credit six times.

144 Music Theatre Workshop IV (4) F, W, S. A performance class concentrating on role building and how an actor prepares for that role. Work culminates with an in-class performance of two abbreviated musicals from different time periods. Prerequisites: audition and consent of instructor. Open only to B.F.A. in Music Theatre students and Drama graduate students. May be taken for credit six times.

145 Music Theatre Singing (1) F, W, S. Private weekly voice lessons for the advanced musical theatre student. Corequisite: Drama 143 or 144. May be taken for credit nine times.

146A-B New York Satellite Program (4-4) W, S. An immersion experience in New York City for the musical theatre performer. **146A:** Class preparation. **146B:** Master class in New York. Prerequisites: Drama 30A and audition. May be taken for credit three times.

147 Music Theatre Dance (4) F, W. An exploration of various dance styles from different eras of the musical theatre stage. Prerequisite: Drama 65 or 142. May be taken for credit six times.

148A, B, C History of American Musical Theatre (4, 4, 4). A survey of the influential artists who produce, write, direct, and perform on America's musical stages. **148A:** 1700s–1940s. **148B:** 1940s–1970s. **148C:** 1970s–present day. Concurrent with Drama 248A, B, C.

149 Music Proficiency for Actors (2) F, S. A musicianship class introducing basic musical terminology, theory, and keyboard concepts. May be taken for credit twice.

150 Costume Production Techniques (4). Studio instruction in pattern making, draping, millinery, and construction techniques. Prerequisite: Drama 50A. May be repeated for credit.

155 Lighting Systems (4). A study of basic electrical practice used in theatrical lighting. Areas of investigation include control system design, system wiring, maintenance of equipment, and new developments in the field of lighting and illumination. Prerequisite: Drama 50C.

157 Lighting Composition (4). Provides an opportunity for students to pursue stage lighting composition in a studio atmosphere. Laboratory practice includes weekly exercises in style and genre. Emphasis is placed on the realization of conceptual ideas. Prerequisite: Drama 50C. May be repeated for credit.

158 Studio in Theatre Design (4). Examines the various functions of scenery and costume: locale, historical period, mood, and atmosphere, with special assignments in each area. Discussion of problems in scenic metaphors and visualization, with emphasis on techniques of planning and presentation (e.g., floor plans, models, and rendering). Prerequisite: Drama 50A or 50B, or consent of instructor. May be repeated for credit.

159 Proseminar in Theatre Design (4). Content varies. Prerequisite: consent of instructor. May be repeated for credit.

160 Light Plotting Techniques (4). A study of the development of theatrical lighting plots from initial conceptualization through final documentation. Areas of emphasis include script analysis, visual approaches, equipment selection and compositional qualities of light. Prerequisites: Drama 50C and 157.

164A-B History of Costume (4-4). A study of the development of dress and the influence of cultural factors on clothing. **164A:** From the time of Egyptians to Early Baroque. **164B:** From late Baroque to World War I.

167 Fabric Modification Techniques (4). Exploration of various dying, printing, painting, and texture modification techniques. Prerequisite: Drama 50A. *Offered every other year.*

168 Theatrical Mask Techniques (4). Design and construction of theatrical masks including paper mache, leather, plastics, and latex. Projects employ traditional and contemporary techniques. Prerequisite: Drama 50A.

169 Costume Rendering Techniques (4). Development of costume rendering skills and techniques. Explores collage, pastel, and ink and emphasizes watercolor. Prerequisite: Drama 50A. May be taken for credit twice.

171 Production Management (4). An examination of stage and production management. Areas of study include production organization, management practices, production scheduling, rehearsal and performance duties, union regulations, and production touring.

173A Theatre Orchestra (2)

175 Staging Shakespeare (4). A seminar in Shakespearean staging practice, both Elizabethan and contemporary. Students prepare a hypothetical production book for an assigned play as it could have been produced at the Globe Theatre in 1610, and a proposal to produce the same play in a contemporary manner today. Prerequisite: Drama 184. May be repeated for credit.

176 Script and Score (4). A form and analysis seminar discussing the libretto and score of landmark musicals. Prerequisites: Drama 148A, B, C. May be taken twice for credit.

177 Song Repertoire (2). F, W, S. A song coaching class culminating in a song recital or showcase. Each quarter will feature a different composer, lyricist, or musical style. Open only to B.F.A. Music Theatre students.

179 Intermediate Sound Design (4). A project-based analysis of the principles of sound design for the theatre. Projects are executed in the sound design studio and may include sound manipulation and recording. Emphasis is placed on the realization of conceptual ideas. Prerequisite: Drama 50D.

180 Contemporary Dramatic Criticism and Theory (4). Reading and analysis of theories and critical approaches to contemporary theatre: Brecht, Artaud, and others who have contributed to the form and idea of the modern theatre. Writing of assigned exercises in dramatic criticism. Prerequisite when offered for upper-division writing: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

181 Acting Theory (4). A study of the theory of acting, with readings in Plato, Aristotle, Quintilian, Shakespeare, Diderot, Stanislavsky, Brecht, Strasberg, Meisner, Grotowski, and other theorists, ancient to contemporary. Prerequisites: Drama 130 and junior standing. Concurrent with Drama 224.

184 Directing (4). The principles of stage directing, covering the director's functions in the areas of interpretation, composition, coaching, and styling a theatrical production. Directing exercises and projects; the final project is the preparation of a hypothetical proposal for a play production. Prerequisites: Drama 30A-B-C; Drama 40A-B-C; or consent of instructor. May be repeated for credit. Formerly Drama 170.

185 Advanced Directing (4). A seminar in directorial organization and research. Student prepares a textual and dramaturgical analysis, a production timetable, and a hypothetical production book of an assigned play. Prerequisite: Drama 184. May be repeated for credit.

190 Studio in Acting (4). May be repeated for credit.

198 Drama Workshop (4). By audition or accepted proposal only. Consists of directing or acting in a regularly scheduled Drama Workshop production and submitting a final evaluation of all work performed. Workshop productions must be proposed by directors on departmental forms, and each project must be approved by the Workshop Committee. Pass/Not Pass only. May be repeated for credit.

199 Project in Theatre (1 to 4). Prerequisite: consent of instructor. May be repeated for credit.

GRADUATE

200 Graduate Studio: Acting (2) F, W, S. Work in graduate studio taken in tandem with graduate studios in stage voice (Drama 201), stage speech (Drama 202), and stage movement (Drama 203). May be repeated for credit.

201 Graduate Studio: Voice (1) F, W, S. Graduate studio in vocal production for actors. May be repeated for credit.

202 Graduate Studio: Speech (1). Graduate studio in speech for actors. May be repeated for credit.

203 Graduate Studio: Movement (2). Work in graduate studio: stage movement taken in tandem with nine graduate studios in acting (Drama 200), voice (Drama 201), speech (Drama 202), and voice/movement dynamics (Drama 206). May be repeated for credit.

206 Graduate Studio: Voice/Movement Dynamics (2) F, W, S. Daily conditioning exercises. May be repeated for credit.

211 Graduate Studio: Directing (4) F, W, S. May be repeated for credit.

212 Graduate Studio: Playwriting (4). Completion of a full-length play or its equivalent and production of a staged reading of the play at the end of the spring quarter. Discussion of relevant literary texts and student writings. May be repeated for credit.

219 Graduate Master Class (1 to 4) F, W, S. Various topics such as Shakespeare, comedy, Molière, improvisation, Kabuki, television acting. May be repeated for credit.

220 Seminar in Dramatic Literature (4) F, W, S. May be repeated for credit.

221 Seminar in Criticism (4). May be repeated for credit.

224 Acting Theory (4). A study of the theory of acting, with readings in Plato, Aristotle, Quintilian, Shakespeare, Diderot, Stanislavsky, Brecht, Strasberg, Meisner, Grotowski, and other theorists, ancient to contemporary. Prerequisite: Drama 130 or consent of instructor. Concurrent with Drama 181.

225 Seminar on Theatre Pedagogy (4) F, W, S. A seminar on the major teaching systems in the dramatic arts with particular attention to professional arts training. Graduate students in Drama only; required prior to applying for Teaching Assistantships in studio areas. May be repeated for credit.

230 Seminar in Contemporary Theatre (4)

235 Script Analysis and Research (4) F. Analysis of dramatic scripts. Examination of dramaturgic structure, character intentions and interactions, historical and literary milieu, and potentials for theatrical realization. May be repeated for credit.

240 Graduate Projects (1 to 4) F, W, S, Summer. Various projects depending on student's concentration (acting, design, musical theatre, directing). May be repeated for credit.

245 Conceptualization and Collaboration (4) F. A study of the potential for directorial conceptualization and collaboration with designers in the areas of scenery, costume, lighting, and sound. May be repeated for credit.

248A, B, C History of American Musical Theatre (4, 4, 4). A survey of the influential artists who produce, write, direct, and perform on America's musical stages. **248A:** 1700s–1940s. **248B:** 1940s–1970s. **248C:** 1970s–present day. Concurrent with Drama 148A, B, C.

254 Graduate Stage Management (4). F, W, S. Studio exercises and projects in stage management. Open only to graduate students in the Stage Management emphasis. May be repeated for credit as topics vary.

255 Graduate Design (4) F, W, S. Student exercises and projects in costume, scenery, lighting, and sound design. Open only to graduate students in the Design emphasis. May be repeated for credit as topics vary.

257E Thesis Writing Project–Stage Management (4) F, W, S. Development of thesis topic with focus on organization, research, timeline, and execution. Prerequisite: 12 units of Drama 254. Satisfactory/Unsatisfactory only.

260 Digital Design: Image Compositing/Rendering (4) F. A studio course in scenic or costume rendering for the theatre using computer image manipulation and compositing techniques. May be taken for credit twice.

261 Digital Design: Drawing/Painting/Rendering (4) W. A studio course in scenic or costume rendering for the theatre using the computer for drawing/painting through the use of the digital pen/tablet. May be taken for credit twice.

262 Digital Design: 2D/3D Modeling (4) W. A studio course in CAD's 2D and 3D modeling capabilities for theatrical design. Instruction in state-of-the-art software for 2D and 3D object creation and theatrical presentation conventions.

263 Digital Design: 3D Rendering (4) S. A studio course in theatrical design through 3D modeling on the computer and use of state-of-the-art rendering software. Instruction emphasizes collaborative design process through the use of scenic designer/lighting designer teams for all projects. Prerequisite: Drama 262.

264 Lighting Graphics (4) S. A studio course in the various graphic methods employed by lighting designers in the theatre. Projects include manual and CAD techniques for Light Plot and Paperwork creation. Prerequisite: Drama 262.

265 Digital Design: 2D CAD (4) S. A studio course in theatrical design and architectural lighting design on the computer. Instruction in state-of-the-art software for 2D object creation. Theatrical and architectural standards implemented in performance design. Prerequisite: Drama 262.

266 Digital Design: Digital Audio Systems (4) F. Comprehensive tutorial on digital audio including hard disk recording, editing, data compression, and ethernet audio distribution. Focus is on recording, editing, and delivery of audio as used by the sound designer in the digital domain. Prerequisite: Drama M.F.A. students only, or consent of instructor.

267 Digital Design: Creating Sounds from Scratch (4) S. The process of analyzing sounds for their core timbral components and using that data to create new sounds—from realistic to fantastic—by means of digital manipulation. Prerequisites: Drama 266; Drama M.F.A. Sound Design students only, or consent of instructor.

271 Conceptual Sound Design (4) W. An intensive, project-based seminar for exploring relationships between sound and sight. Synesthesia, creative intent vs. audience perception, and sound/movement are typical of the many topics to be explored. A series of creative projects are assigned and critiqued in peer review. Prerequisites: Drama 266; Drama M.F.A. Sound Design students only, or consent of instructor.

272 Musical Theatre Sound/Concert Sound (4) S. A concept-to-opening study of the process of designing sound systems for musicals and live/touring sound. Special attention given to the paperwork and documentation required to package, build, and mix these shows. Prerequisite: Drama M.F.A. Sound Design students only, or consent of instructor.

277 Critical Listening (4) F. Exploration of the many variables that affect (and effect) the audio chain. Perceiving and understanding these parameters unlocks the art of controlling sound and stylizing cues. Also includes the process of equalizing/aligning sound systems and the art of audio mastering. Prerequisites: Drama 266; Drama M.F.A. Sound Design students only, or consent of instructor.

279 Advanced Sound Design (4) F, W, S. An in-depth investigation into sound design for the theatre. Special emphasis is placed on text analysis, design conception, content creation, content delivery, and design organization. Class projects include creating paper designs and paperwork for different texts.

290 Dramatic Literature and Theatre History Prior to 1900 (4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

291 Dramatic Literature and Theatre History, 1900 to Present (4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

292 Cultural and Critical Theory (4). F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

293 Directed Studies (4 to 12). F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

294 Dissertation Research (4 to 12) F, W, S. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory. May be repeated for credit.

295 Professional Internship (1 to 8) F, W, S, (1 to 12) Summer. An arranged internship at the South Coast Repertory Theatre, or other equity theatre company, for qualifying M.F.A. students. A stipend and equity points are provided by the theatre company. May be repeated for credit.

296 Seminar in Drama Pedagogy (4) F, W, S. Seminar in preparation for and required prior to receiving a Teaching Assistantship in Drama/Comparative Literature 40 (Development of Drama) course; particular attention on course preparation and pedagogical techniques. Prerequisites: first-year Drama doctoral students only and consent of instructor.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory only.

DEPARTMENT OF MUSIC

303 Music and Media Building; (949) 824-6615
David Brodbeck, **Department Chair**

Faculty

Kei Akagi, B.A. International Christian University, Tokyo, *UCI Chancellor's Professor of Music* (jazz piano)
Amy Bauer, Ph.D. Yale University, *Assistant Professor of Music* (music theory)
Haroutune Bedelian, Associate of the Royal Academy of Music, London, *Professor of Music* (violin)
David Brodbeck, Ph.D. University of Pennsylvania, *Department Chair and Professor of Music, and The Robert and Marjorie Rawlins Chair in Music* (music history)
Rae Linda Brown, Ph.D. Yale University, *Professor Emerita of Music*
Robin Buck, M.M. University of Southern California, *Associate Professor of Music and Director of the UCI Opera* (vocal arts)
Patricia Cloud, M.M. University of Southern California, *Lecturer in Music* (flute)
Jonathan Davis, D.M.A. Juilliard School of Music, *Lecturer in Music* (oboe)
Michael Dessen, Ph.D. University of California, San Diego, *Assistant Professor of Music* (composition and improvisation)
Theresa Dimond, D.M.A. University of Southern California, *Lecturer in Music* (percussion)
Christopher Dobrian, Ph.D. University of California, San Diego, *Professor of Music* (composition and technology)
Nohema Fernández, D.M.A. Stanford University, *Professor of Music* (piano)
Bernard Gilmore, D.M.A. Stanford University, *Professor Emeritus of Music*
Frederick Greene, M.Mus. Ed. University of Southern California, *Lecturer in Music* (tuba)
Lorna Griffitt, D.M. Indiana University, *Lecturer with Security of Employment, Music* (piano)
Matthew Hare, D.M.A. University of Iowa, *Lecturer in Music* (double bass)
Jason Harnell, *Lecturer in Music* (jazz percussion)
Robert Hickok, B.Mus. Yale University, *Professor Emeritus of Music*
Joseph B. Huszti, M.Mus. Northwestern University, *Professor of Music and Director of the UCI Choirs* (vocal arts)
Jerzy Kosmala, D.M. Indiana University, *Lecturer in Music* (viola)
Kevin McKeown, M.M. University of California, Los Angeles, *Lecturer in Music* (wind ensemble)
George McMullen, *Lecturer in Music* (jazz trombone)
Elliott Moreau, M.M. University of Southern California, *Lecturer in Music* (bassoon)
Margaret Murata, Ph.D. University of Chicago, *Professor of Music* (music history)
Darek Oles, B.A. California Institute of the Arts, *Lecturer in Music* (jazz bass)
Hossein Omoumi, Ph.D. University of Florence, *Professor of Music and Maseeh Professor in Persian Performing Arts* (Persian music)
Charles M. Owens, B.M. California State University, Los Angeles, *Lecturer in Music and Director of the UCI Jazz Orchestra*
Margaret Parkins, D.M.A. State University of New York at Stony Brook, *Lecturer in Music* (cello)
Gerald Pinter, B.M. University of North Texas, *Lecturer in Music* (jazz saxophone)
Colleen Reardon, Ph.D. University of California, Los Angeles, *Professor of Music* (music history)
Bobby Rodriguez, D.M.A. University of California, Los Angeles, *Lecturer in Music* (jazz trumpet)
John Schneiderman, B.Mus. University of California, Irvine, *Lecturer with Security of Employment, Music* (guitar and lute)
Nina Scolnik, B.Mus. Oberlin Conservatory; Performance Diploma, Juilliard School, *Lecturer with Security of Employment, Music* (piano)
H. Colin Slim, Ph.D. Harvard University, *Professor Emeritus of Music*
David Stetson, B.M. University of Southern California, *Lecturer in Music* (trombone)
Cecilia Sun, Ph.D. University of California, Los Angeles; D.M.A. Eastman School of Music, *Assistant Professor of Music* (music history)
Darryl Taylor, D.M.A. University of Michigan, *Associate Professor of Music* (vocal arts)
Stephen Tucker, D.M.A. University of California, Los Angeles, *Associate Professor of Music and Director of the UCI Symphony*

Kojiro Umezaki, M.A. Dartmouth College, *Assistant Professor of Music* (improvisation and technology)
Amanda Walker, M.F.A. University of California, Los Angeles, *Lecturer in Music* (clarinet)
David Washburn, M.M. New England Conservatory of Music, *Lecturer in Music* (trumpet)

UNDERGRADUATE PROGRAM

The Department of Music offers the degrees of Bachelor of Arts in Music and Bachelor of Music. Both provide a secure foundation in the academic and applied study of music. This does not necessarily mean, however, that all undergraduates will go on to become professional musicians or musicologists. A good number do indeed continue to further study at the graduate level. However, many also use their degrees in Music as a more general educational qualification. Music is perhaps unique among the arts and humanities in terms of the wide range of transferable skills developed in the undergraduate curriculum. Musicians learn how to think, to write, to present themselves in public, and to work collaboratively in different kinds of teams. They have intellectual, technical, and social skills that tend to be widely admired by employers in many fields. They have also demonstrated over the long term a determination and commitment, and a desire to succeed, often beyond the norm. With a degree in Music, students will find that many career paths lie before them.

The **Bachelor of Arts (B.A.)** degree program enables students to study music history, music theory, composition, or performance within a curriculum that is flexible enough to allow for a second major, study abroad, and other curricular options. A senior thesis or project is required.

The **Bachelor of Music (B.Mus.)** degree program offers students the opportunity to specialize in piano performance, vocal performance, instrumental performance (flute, oboe, clarinet, bassoon, horn, trumpet, trombone, tuba, percussion, violin, viola, violoncello, and double bass), jazz studies (piano, saxophone, trumpet, trombone, bass, and percussion), and guitar and lute performance. Students in this program receive weekly private instrumental or vocal instruction, and present a public solo recital during their senior year.

Undergraduate Admissions. In addition to meeting the entrance requirements for the University of California, all undergraduate applicants who wish to major in Music must demonstrate appropriate vocal or instrumental proficiency, as determined by the results of the Department's required entrance audition. To be considered for an invitation to play this audition, applicants must submit a prescreening recording (typically due in early January); only those applicants who are judged to be competitive on the basis of this recording will be invited to campus for an audition (typically scheduled in late January or early February). *For the most up-to-date information about the prescreening and audition process, see the Department's Web site at http://music.arts.uci.edu.*

All first-year applicants and second-year transfer students apply to the B.A. degree program. Admission to the B.Mus. degree program, for those continuing students who wish to pursue a pre-professional track, is by a second audition (the B.Mus. audition), typically taken during winter quarter of the second year. Third-year transfers may apply and audition for admission to either the B.A. or B.Mus. program. Third-year transfer applicants who are offered admission into the B.Mus. degree will normally be expected to perform on their instrument at the level of other third-year students in the B.Mus. program and will be expected to complete their degrees in two years. Third-year transfer applicants who are offered admission into the B.A. program will likewise be expected to complete their degree requirements within two years.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN MUSIC

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements—Common Curriculum

Music 15A-B-C (Musicianship)

Music 16A-B-C (Music Theory)

Music 16D (Theory/Musicianship)

Music 40B-C (History of European Music: Josquin to Wagner)

Music 40D (Twentieth-Century Music)

Six quarters of instrumental or vocal instruction (Music 165–170)

NOTE: A minimum grade of C- is required to advance from one stage to the next in the course sequences Music 15A-B-C and Music 16A-B-C-D.

Additional Requirements for the Bachelor of Arts Degree

In addition to completing the common curriculum, students in the B.A. program must pass the departmental piano proficiency examination or take three quarters of Music 10 (Piano for Majors) with a grade of C or better and complete the following course requirements:

1. Three courses in Theory, Composition, and Technology, selected from Music 51 (Music Technology and Computers), Music 131 (Post-Tonal Theory), Music 132 (Jazz Theory), Music 136 (Instrumentation), Music 147 (Studies in Music Technology), Music 150 (Composition), Music 151 (Computer Music Composition), Music 152 (Interactive Arts Programming), Music 155 (Music Analysis), Music 157 (Advanced Study in Composition), Music 189 (Accompanying for Plucked Strings: Continuo and Changes).
2. Three courses in Music and Culture (including at least two upper-division courses) selected from Music 8 (The Beatles and the Sixties), Music 9 (Rock: The Early Years), Music 78A, B (History of Jazz), Music 82A, B, C (Pish Radif: Introduction to Classical Persian Music), Music 140 (Studies in Medieval Music), Music 141 (Studies in Renaissance Music), Music 142 (Studies in Baroque Music), Music 143 (Studies in Classical Music), Music 144 (Studies in Romantic Music), Music 145 (Studies in Twentieth-Century Music), Music 146 (Studies in Jazz Music), Music 148 (Studies in Ethnomusicology), Music 149 (Studies in Music History), Music 156A-B-C (Song Literature), Music 180 (Music Criticism), Anthropology 138M (Music as Expressive Culture), Anthropology 138T (Africa and Afro-American Music), Chicano/Latino Studies 115A (Latino Music), Chicano/Latino Studies 115B (Music of Greater Mexico), Chicano/Latino Studies 115C (Afro-Latin Music), African American Studies 143 (Topics in African American Music), African American Studies 144 (Fire Music: Jazz and the Black Arts Movement).
3. Six courses in Performance and Practice selected from Music 21A-B-C (Keyboard Skills), Music 158A-B-C (Diction), Music 160 (University Orchestra), Music 161 (Wind Ensemble), Music 162 (University Chorus), Music 164 (Opera Workshop), Music 171 (Chamber Singers), Music 172 (Men in Blaque), Music 176 (Chamber Ensembles), Music 178 (Jazz Orchestra), Music 181A (Jazz Improvisation), Music 193A-B (Conducting), Music 197 (Word and Music).
4. One quarter of Senior Project (Music 192P). Depending upon the student's area of emphasis, one of the following senior projects (which may develop work originally completed in meeting the requirements of another course) must be completed: (1) a formal lecture or lecture/performance lasting a minimum of 20

minutes; (2) a composition or portfolio of compositions of appropriate length growing out of work done in Music 157; or (3) a thesis of at least 20 double-spaced pages on an appropriate musical subject. Proposed projects, along with the name of the Senate faculty member who has agreed to supervise it, must be submitted to the undergraduate faculty advisor by November 1 of the academic year in which graduation is expected. Upon approval of the project proposal the student may register for one quarter of independent study (Music 199) in which to complete the project. In any case, the student must register for Music 192P in the quarter in which the project is completed.

Departmental Honors Program in Music and Culture

The Honors Program in Music and Culture is designed to challenge superior students in the B.A. program beyond the academic requirements of the Music major. It provides them with the opportunity to advance their knowledge in the scholarly fields of music while developing their writing, analytical, and research skills. The honors program is ideally suited for students who wish to study music at the graduate level, but not in performance, and who may be preparing for graduate work in arts criticism, the humanities, the social sciences, and the law.

Eligibility requirements are (1) completion of the core requirements for the major; (2) an overall GPA of 3.5 or higher; and (3) completion of the eligibility form (available for download through the Departmental Web site).

Admission to the Honors Program in Music and Culture is competitive. Students must apply no later than the spring quarter of their junior year. The application should be accompanied by two substantial writing samples. These may represent work done for courses at UCI. Only truly exceptional students may undertake Honors projects.

Students who are admitted are required to complete three additional courses in categories 1 and 2 under Additional Requirements for the Bachelor of Arts Degree beyond those taken in fulfillment of the core requirement; all three must be upper-division courses (numbered 100 or higher). Relevant upper-division courses in other departments may be taken to fulfill this requirement by approval of the Department Honors Committee.

The capstone project is a senior thesis, an extended original research project prepared under the supervision of the faculty advisor on a topic chosen by the student in consultation with that advisor. The thesis topic must be approved by the Departmental Honors Committee prior to the end of the fall quarter of the senior year. Students develop their topic during an ensuing two-quarter sequence of Senior Thesis (Music 195A-B). Upon successful completion of the thesis, a single grade is applied for both quarters and a total of 4 units is posted to the student's record (2 units each for Music 195A and 195B).

Additional Requirements for the Bachelor of Music Degree

In addition to completing the common curriculum, students in the B.Mus. program must pass the departmental piano proficiency examination and complete the following course requirements:

1. Three courses in Theory, Composition, and Technology including Music 155 (Music Analysis) and two others selected from Music 51 (Music Technology and Computers), Music 131 (Post-Tonal Theory), Music 132 (Jazz Theory), Music 136 (Instrumentation), Music 147 (Studies in Music Technology), Music 150 (Composition), Music 151 (Computer Music Composition), Music 152 (Interactive Arts Programming), Music 157 (Advanced Study in Composition), Music 189 (Accompanying for Plucked Strings: Continuo and Changes).
2. Three courses in Music and Culture, selected from Music 140 (Studies in Medieval Music), Music 141 (Studies in Renaissance Music), Music 142 (Studies in Baroque Music), Music 143 (Studies in Classical Music), Music 144 (Studies in Romantic Music), Music 145 (Studies in Twentieth-Century Music), Music 146 (Studies in Jazz Music), Music 148 (Studies in Ethnomusicology), Music 180 (Music Criticism), Anthropology 138M (Music as Expressive Culture), Anthropology 138T (Africa and Afro-American Music), Chicano/Latino Studies 115A (Latino Music), Chicano/Latino Studies 115B (Music of Greater Mexico), Chicano/Latino Studies 115C (African-Latin Music), African American Studies 143 (Topics in African American Music), African American Studies 144 (Fire Music: Jazz and the Black Arts Movement).
3. Instrumental or vocal instruction (Music 165–170), every quarter in residence upon admission to the B.Mus. program (but no more than 12 quarters total, including instruction taken to meet the Common Curriculum).
4. Music 192S (Senior Recital).
5. Completion of the following courses according to the approved Bachelor of Music specialization:

   Guitar and Lute: Music 176 (Chamber Ensembles), every quarter in residence.

   Jazz Studies: Music 78A (History of Jazz); Music 132 (Jazz Theory); Music 160 (University Orchestra), Music 161 (Wind Ensemble), or Music 178 (Jazz Orchestra) and Music 176 (Chamber Ensembles), every quarter in residence.

   Piano: Music 21A-B-C (Keyboard Skills); Music 122A-B-C (Piano Literature); Music 126 (Piano Pedagogy); six quarters of Music 176 (Chamber Ensembles) and three quarters of Music 162P, 164P, 166P, or 197 (Accompanying), as assigned by the Department. Transfer students must complete six quarters of chamber ensembles and/or accompanying in residence.

   Voice: Music 156A-B (Song Literature), Music 158A-B-C (Diction); nine quarters of choral ensembles (minimum of three quarters for junior transfers; minimum of six quarters for sophomore transfers) selected from Music 162 (University Chorus), Music 171 (Chamber Singers), or Music 172 (Men in Blaque); three quarters of Music 164 (Opera Workshop); Junior Recital (192J).

   Woodwinds, Brass, Percussion, and Strings: Music 160 (University Orchestra) or Music 161 (Wind Ensemble) and Music 176 (Chamber Ensembles), every quarter in residence.

Study Abroad

The Department actively encourages this option for eligible students and makes every effort to accommodate the student's work abroad within departmental requirements. Interested students should consult with the undergraduate faculty advisor at the earliest possible date for advice on this matter. For further information, see http://www.cie.uci.edu/academics/music.html.

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Music, with emphasis in Choral Conducting, Collaborative Piano, Guitar/Lute Performance, Instrumental Performance, Integrated Composition, Improvisation, and Technology (ICIT), Piano Performance, and Vocal Arts.

Admission

In addition to meeting all general requirements for admission to graduate study, applicants should hold a B.A. in Music, a B.Mus., or the equivalent.

The online application must be submitted and all supporting materials must be received by January 15. Late applications cannot be considered. Supporting materials must include at least one substantial writing sample, preferably on a musical subject. This requirement may be fulfilled by the submission of an undergraduate paper of appropriate scope, preferably on a musical topic.

Applicants must audition for members of the Music faculty by February 1. In exceptional cases (as approved in advance by the departmental graduate advisor), a recently recorded performance may be accepted in lieu of a live audition. Applicants in composition must, in addition, submit a representative sample of scores and recordings of their works.

Applicants are expected to have good general knowledge of music history and music theory, competence in basic musicianship skills, including sight-singing, written and keyboard harmony, dictation, and basic keyboard facility (including sight-reading). Entering students will be given diagnostic tests in these areas prior to the beginning of classes and will be required to remedy any evident deficiencies during the first year in residence by registering for the appropriate undergraduate courses. Credit earned in such courses cannot be counted toward fulfillment of any degree requirement.

General Degree Requirements

Course requirements may be fulfilled only by graduate courses (numbered 200 and higher) and upper-division undergraduate courses (numbered 100 and higher), and only by those courses in which a grade of B or higher has been earned.

All students except those in the ICIT emphasis must complete the graduate core curriculum in bibliography (Music 200) and music analysis (Music 201A-B). All students must register for tutorial study in the major field (Music 210, 211, or 212) during every quarter in residence. Students in the emphasis in Instrumental Performance must enroll in an approved large ensemble during every quarter in residence.

Students enrolled in the emphasis in Choral Conducting, Collaborative Piano, Guitar/Lute Performance, Piano Performance, and Vocal Arts must fulfill a foreign language requirement, as described in the individual emphasis descriptions below. This requirement may be met either by attaining a passing score in the departmental examination or by earning a grade of B or higher in level 2A of an approved undergraduate language course.

All students must pass the Comprehensive Examination (normally taken during the fifth quarter in residence) and perform one or more public recitals. Details are found in the individual emphasis descriptions below.

The normative time to degree for students in the M.F.A. program is two years. Residence is required. The normative time to degree can be extended to three years only through a petition to the Chair of the Department. The maximum time to degree is three years. Students who do not complete the degree in three years will be dropped from the program.

Individual Emphasis Requirements

Choral Conducting

Languages: reading knowledge of French, German, or Italian.

Course Work: Bibliography (Music 200), 4 units; Analysis (Music 201A-B), 8 units; Choral Conducting (Music 210), every quarter in residence (maximum 24 units); Diction (Music 158A-B-C), 6 units (Note: this requirement may be met by examination, in which case these 6 units are taken as electives); Seminars (selected from Music 220, 230, 235), 12 units; electives, selected with advisor, 12 units; Graduate Recital (Music 214), 0 units.

Comprehensive Examination: This is a special field exam, related to (but not limited to) repertoire selected for the Graduate Recital. It is taken no later than March of the second year. The graduate committee sets the exam 24 hours in advance; the student makes an oral presentation and then fields the committee's questions.

Collaborative Piano

Languages: reading knowledge of French, German, Italian, or Spanish.

Course Work: Bibliography (Music 200), 4 units; Analysis (Music 201A-B), 8 units; Performance (Music 211), every quarter in residence (maximum 24 units); Seminar (selected from Music 220, 230, 235), 4 units; Diction (Music 158A-B-C), 6 units (Note: This requirement is waived for students who demonstrate competence in this area by passing a diagnostic exam, in which case these 6 units are taken as electives); Song Literature (Music 156A-B-C), 6 units; Chamber Ensembles (Music 176), 3 units; two Graduate Recitals (Music 214), one instrumental and one vocal, 0 units.

Comprehensive Examination: This is a special field exam, related to (but not limited to) repertoire selected for the Graduate Recitals. It is taken no later than March of the second year. The graduate committee sets the exam 24 hours in advance; the student makes an oral presentation and then fields the committee's questions.

Guitar/Lute Performance

Languages: Reading knowledge of French, German, Italian, or Spanish.

Course Work: Bibliography (Music 200), 4 units; Analysis (Music 201A-B), 8 units; Performance (Music 211), every quarter in residence (maximum of 24 units); Seminars (selected from Music 220, 230, 235), 8 units; Chamber Ensembles (Music 176), 3 units; Accompanying for Plucked Strings: Continuo and Changes (Music 189), 6 units; Graduate Project in Performance (Music 240), 4 units; Graduate Recital (Music 214), 0 units. (Note: The recital is supported by a written essay, presented in advance of the Comprehensive Examination.)

Comprehensive Examination: This is a special field exam, related to (but not limited to) repertoire selected for the Graduate Recital. It is taken no later than March of the second year. The graduate committee sets the exam 24 hours in advance; the student makes an oral presentation and then fields the committee's questions.

Instrumental Performance

Course Work: Bibliography (Music 200), 4 units; Analysis (Music 201A-B), 8 units; Performance (Music 211), every quarter in residence (maximum of 24 units); Seminars (selected from Music 220, 230, 235), 8 units; Chamber Ensembles (Music 176), 3 units; Large Ensemble (Music 160, 161), every quarter in residence (maximum of 12 units); Graduate Recital (Music 214), 0 units.

Comprehensive Examination: This is a special field exam, related to (but not limited to) repertoire selected for the Graduate Recital. It is taken no later than March of the second year. The graduate committee sets the exam 24 hours in advance; the student makes an oral presentation and then fields the committee's questions.

Integrated Composition, Improvisation, and Technology (ICIT)

Course Work: Composition (Music 212), every quarter in residence (maximum of 24 units); two courses in Music Technology (Music 215), 8 units; Open Improvisation (Music 231), 4 units; Advanced Improvisational Harmony (Music 232), 4 units; Black Music (Music 233), 4 units; Critical Studies in Music (Music 235), 4 units; seminar selected from Music 220 or 230, or comparable seminar in another department, 4 units; Thesis Colloquium (Music 239), 2 units.

Comprehensive Examination: Preparation and public presentation of a capstone project of original music (concert of original works or comparable body of original recorded music), including full

documentation (scores and recordings as applicable) and a supporting written essay. Successful oral defense of the capstone project (music and essay) before the faculty committee.

Piano Performance

Languages: Reading knowledge of French, German, Italian, or Spanish.

Course Work: Bibliography (Music 200), 4 units; Analysis (Music 201A-B), 8 units; Performance (Music 211), every quarter in residence (maximum of 24 units); Seminars (selected from Music 220, 230, 235), 8 units; Chamber Ensembles (Music 176), 3 units; Electives, selected with advisor (upper division or graduate, Music or non-Music), 4 units; two Graduate Recitals (Music 214), 0 units.

Comprehensive Examination: This is a special field exam, related to (but not limited to) repertoire selected for the Graduate Recitals. It is taken no later than March of the second year. The graduate committee sets the exam 24 hours in advance; the student makes an oral presentation and then fields the committee's questions.

Vocal Arts

Languages: Reading knowledge of French, German, Italian, or Spanish.

Course Work: Bibliography (Music 200), 4 units; Analysis (Music 201A-B), 8 units; Performance (Music 211), every quarter in residence (maximum of 24 units); Seminars (selected from Music 220, 230, 235), 8 units; Opera Workshop (Music 164), 6 units; Electives, selected with advisor (upper division or graduate, Music or non-Music), 10 units; Graduate Recital (Music 214), 0 units.

Comprehensive Examination: This is a special field exam, related to (but not limited to) repertoire selected for the Graduate Recital. It is taken no later than March of the second year. The graduate committee sets the exam 24 hours in advance; the student makes an oral presentation and then fields the committee's questions.

Courses in Music

***(Schedule of Classes* designation: Music)**

LOWER-DIVISION

3 Introduction to Music (4). Introduction to musical concepts and active listening skills. Students develop musical understanding through critical readings, selected repertoire, fundamental concepts related to rhythm, pitch, and genre. Students apply those concepts to music from a wide range of historical and cultural origins. **(IV)**

8 The Beatles and the Sixties (4). Through a study of the music of the Beatles, students are introduced to selected broader historical and cultural themes (e.g., race and music, gender and music, music and the counterculture) while developing an understanding of the basic elements of music. **(IV)**

9 Rock: The Early Years (4). Surveys the social and cultural fabric of the post-World War II United States (from the late 1940s through the early 1970s) as seen through the prism of music—rock and roll music. **(IV)**

10 Piano for Majors (1) F, W, S. For Music majors with little or no piano experience. Provides the necessary background for realizing keyboard exercises required in the theory and harmony courses, and develops skills to play and sight-read simple music from different periods. May be taken for credit three times.

14A-B-C European and American Music: 1700–Twentieth Century (4-4-4) F, W, S. Survey of European and American music from the Baroque period through the twentieth century. **14A:** Baroque and Classical music with adequate attention given to the Medieval and Renaissance periods. **14B:** The nineteenth and twentieth centuries. **14C:** Selected topics in American music. **(IV)**

15A-B-C Musicianship (2-2-2) F, W, S. Interval and chord quality identification, melodic and harmonic dictation, tonal and chromatic sight-singing, rhythmic reading and dictation. Corequisite: Music 16A-B-C. Prerequisite: a minimum grade of C- is required to advance from one stage to the next in the Music 15A-B-C sequence. Open to Music majors only.

16A-B-C Music Theory (4-4-4) F, W, S. 16A: Review of music fundamentals. Triad and seventh chords, musical texture, chord spacing, embellishing tones, and introduction to diatonic harmony. Part-writing and model composition with tonic, dominant seventh, and subdominant harmonies. **16B:** Introduction to phrase structure. Part-writing and harmonization with predominants, linear dominants, 6/4 embellishing chords, leading-tone and other diatonic seventh chords. Advanced meters and rhythmic-metric dissonance. Diatonic sequence. Introduction to tonicization and modulation through motion to V and III. **16C:** Tonicization and modulation to closely related keys. Simple binary and ternary forms. Voice-leading reductions and simple forms. Diatonic sequence with seventh chords. Introduction to chromatic harmony I: modal exchange and mixture chords, the Neapolitan and augmented sixth chords. Corequisites: Music 15A-B-C. Prerequisite: a minimum grade of C- is required to advance from one stage to the next in the Music 16A-B-C-D sequence.

16D Theory/Musicianship (4) F. Extended homophonic and contrapuntal formal designs (continuous variations, rondo form, sonata form, invention, fugue). Embellishing chromatic chords, dominant prolongation, modulations to foreign keys, extended harmonies, chromatic sequence, chromatic voice-leading and symmetrical divisions of the octave. Prerequisites: Music 15A-B-C and 16A-B-C, all with a a minimum grade of C-.

21A-B-C Keyboard Skills (1-1-1) F, W, S. Designed to develop the foundational skills of sight-reading, harmonization, transposition, improvisation, figured bass realization, and score reading.

25A-B Fundamentals Music (2-2) F, W. Basic concepts and materials. Major and minor scales, intervals between pitches, key signatures, elements of rhythm, diatonic chords in root position, and inversion. Simple and compound meters.

40B-C History of European Music: Josquin to Wagner (4-4) F, W. An introduction to the analysis of musical styles and forms and to the sources for constructing music history and reconstructing historical music. **40B:** to J.S. Bach. Prerequisite: Music 16C. **40C:** to Richard Wagner. Prerequisite: Music 40B; Music 16D recommended. Open to Music majors only. **(IV, VIII)**

40D Twentieth-Century Music (4) S. Survey of principal composers, movements, and compositional techniques of Western art music of the modern era. Prerequisite: Music 16C. **(IV, VIII)**

41 Major Composer (4). Study of the works of an important composer with emphasis on their significance in historical and social contexts. Composers selected represent a wide variety of historical periods, nationalities, and stylistic orientations. Primarily for non-music majors; majors may enroll with permission. May be taken for credit two times as topics vary.

51 Music Technology and Computers (4) F. A study of the influence of technology on the musical culture and aesthetics of America in the twentieth century, with particular emphasis on the role of the computer. Work includes lectures, readings, listenings, discussions, demonstrations, writing, and experimentation.

78A, B History of Jazz (4, 4). 78A: Development of jazz from its African and African American folk origins through blues, early jazz and the swing era. **78B:** Continuation of the above survey, concentrating on bebop, "cool" jazz, and fusion. **(VII)**

82A, B, C Pish Radif: Introduction to Classical Persian Music (4, 4, 4) F, W, S. Survey of art music in Iran and the basic structures of classical Persian music. Students learn through vocal exercises how Persian music evolved and how it was influenced by Persian poetry. An interest in vocal music is strongly recommended.

UPPER-DIVISION

122A-B-C Piano Literature (2-2-2) F, W, S. Survey of stringed keyboard literature from the English Virginalists through twentieth-century composers. Historical, formal, and stylistic considerations of music presented. Performances by class participants and occasional outside guests. Prerequisites: Music 16A-B-C.

126 Piano Pedagogy (2). The materials and methods of piano instruction are examined and evaluated.

131 Post-Tonal Theory (4) W. Study of significant harmonic, rhythmic, and structural practices since 1900. Analysis and written work exploring free atonality and serialism; neo-tonal practices such as use of extended tertian harmonies, modalism, pandiatonicism, and non-tertian harmonies; structural principles such as aleatory, metric modulation and minimalism. Prerequisite: Music 16D. Formerly Music 35A.

132 Jazz Theory (4). Study of jazz harmony and melody construction in improvisation. Covered topics include terminology, chord symbols, notation, voicings, and scales as commonly used in jazz and popular music. Issues regarding tonality and ramifications of the blue scale are also examined. Prerequisite: Music 16D.

136 Instrumentation (4). Ranges and capabilities of modern orchestral instruments. Exercise in writing for various combinations of wind, string, and percussion instruments and for full orchestra. Prerequisite: Music 16C.

140 Studies in Medieval Music (4)

141 Studies in Renaissance Music (4). Prerequisite: Music 40B or equivalent, or consent of instructor. May be taken for credit three times.

142 Studies in Baroque Music (4). Prerequisite: Music 40B or equivalent, or consent of instructor.

143 Studies in Classical Music (4). Prerequisite: Music 40C or equivalent, or consent of instructor. May be taken for credit three times.

144 Studies in Romantic Music (4). Prerequisite: Music 40C or equivalent, or consent of instructor. May be taken for credit three times.

145 Studies in Twentieth-Century Music (4). Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing.

146 Studies in Jazz Music (4)

147 Studies in Music Technology (4) F, W, S. Specialized topics in electronic music, computer-aided music, and other aspects of music technology.

148 Studies in Ethnomusicology (4)

149 Studies in Music History (4) W. Specialized topics in musical genres; culture and social issues; performance practices; and interrelated arts. Prerequisites: satisfactory completion of the lower-division writing requirement; Music 40B-C-D or equivalent, or consent of instructor.

150 Composition (4) F, W, S. Exercises and projects for diverse instrumental-vocal combinations; contemporary techniques and problems. Participation in the improvisation ensemble and working with electronic media. Prerequisite: Music 16C or consent of instructor. May be repeated for credit.

151 Computer Music Composition (4) W. Exercises in the composition of music uniquely possible by computer, including digital signal processing, computer control of synthesizers and processors, and algorithmic composition. Demonstrations and musical analyses in class; considerable studio work outside class. Prerequisite: Music 51 or consent of instructor.

152 Interactive Arts Programming (4) S. Study of artistic issues and programming techniques involved in the development of interactive computer art and music. Theoretical background, basic tenets of programming, and practical exercises in programming interactive computer multimedia art. Prerequisite: Music 151 or Studio Art 106 or consent of instructor.

155 Music Analysis (4). Methods of formal analysis applicable to all Western musical styles: additive, continuous, transformational, and hierarchic forms; rhythm, texture, and sonority as form and process. Prerequisites: Music 16D and 40B-C, or equivalent. May be repeated for credit as topics vary. Formerly Music 155A.

156A-B-C Song Literature (2-2-2) F, W, S. A survey of song literature. Designed as an overview of the song repertoire. **156A:** German Lieder. **156B:** French mélodie. **156C:** National Schools.

157 Advanced Study in Composition (2) F, W, S. Individual weekly lessons in composition. Prerequisite: Music 150. Open only to upper-division Music majors. May be taken for credit six times.

158A-B-C Diction (2-2-2) F, W, S. In-depth study of the International Phonetic Alphabet (IPA), including its transcription and pronunciation, and its application for singers. **158A:** Introduction to IPA and Italian diction. **158B:** German diction. **158C:** French diction.

160 University Orchestra (1 to 2) F, W, S. Study and performance of standard orchestral repertory and works by contemporary composers. Membership is open to all qualified students by audition only. May be repeated for credit. **(IX)**

161 Wind Ensemble (1 to 2) F, W, S. Study and performance of works written for varying combinations of wind and percussion instruments. Membership is open to all qualified students by audition only. May be repeated for credit. **(IX)**

162 Choral Ensembles (1 to 2) F, W, S. Make-up of the ensembles varies and may include University Chorus, Chamber Choir, Madrigal Singers, Women's Chorus, and Reading Choir. Membership is open to all qualified students by audition only. May be repeated for credit. **(IX)**

162L Basic Voice Lab (1) F, W, S. Vocal technique and musicianship for selected singers in UCI's choral organizations. Not open to Music majors. Corequisite: Music 162. Prerequisite: consent of Director of the choral group. May be repeated for credit.

162P University Chorus: Accompanying (2) F, W, S. Keyboard accompanying for one of the UCI choral organizations, with individual coaching in sight reading, score reading, and other accompanying skills. Prerequisite: consent of instructor. May be repeated for credit.

164 Opera Workshop (2) F, W, S. Preparation and performance of operatic repertoire, including arias, scenes, and fully staged operas, and/or stage training and role analysis. May be repeated for credit. **(IX)**

164P Opera Workshop: Accompanying (2) F, W, S. Training in techniques and operatic repertory for keyboard players. Prerequisite: consent of instructor. May be repeated for credit.

165 Advanced Study in Piano (2) F, W, S. Private weekly lessons. Open to Music majors only. May be repeated for credit.

166 Advanced Study for String Instruments (2) F, W, S. Private weekly lessons. Open to Music majors only. May be repeated for credit.

166P String Accompaniment (2) F, W, S. Chamber ensemble experience with the solo string repertory for keyboard, participation in the weekly string master class, performance in public recitals. Prerequisite: consent of instructor. May be taken for credit three times.

167 Advanced Study for Wind Instruments (2) F, W, S. Private weekly lessons. Open to Music majors only. May be repeated for credit.

168 Advanced Study in Voice (2) F, W, S. Private weekly lessons. Open to Music majors only. May be repeated for credit.

169 Advanced Study for Percussion Instruments (2) F, W, S. Private weekly lessons. Open to Music majors only. May be repeated for credit.

170 Advanced Study for Guitar, Lute, and Other Plucked Strings (2) F, W, S. Private weekly lessons and a weekly master class/workshop for the discussion of solo repertory and performance practice, including special topics such as historical notational systems, traditional American guitar styles, and demonstrations of period plucked instruments. Open to Music majors only. May be repeated for credit.

171 Chamber Singers (2) F, W, S. A select ensemble specializing in vocal chamber music from all periods. Frequent performances on and off campus. Membership is open to all singers by audition. May be repeated for credit.

172 Men in Blaque (2) F, W, S. Men's chamber choir studying and performing music in original SATB and TTBB voicing. Gregorian chant, Renaissance motets and masses, part-songs from the Romantic era by Schubert and Schumann, folksongs, spirituals, jazz and contemporary literature comprises majority of repertoire. May be taken for credit 12 times.

176 Chamber Ensembles (1) F, W, S. Make-up of the ensembles varies and may include various Classical ensembles, Latin Jazz Ensemble, Small Jazz Combos, Percussion Ensemble, and Guitar Ensemble. Membership is open to all qualified students by audition only. May be repeated for credit. **(IX)**

178 Jazz Orchestra (1) F, W, S. Rehearsal and performance of literature written for large jazz ensemble with emphasis on methods and materials. Laboratory setting for new arrangers and/or composers of modern jazz pieces. Prerequisite: consent of instructor. May be repeated for credit. **(IX)**

180 Music Criticism (4). Topics vary.

181A Beginning Jazz Improvisation (2) F. Develops the student's basic understanding of the fundamentals of jazz improvisation. Basic harmonic patterns, blues, modality, and simpler song forms are covered. This is a performance workshop requiring a reasonable amount of instrumental facility. Prerequisite: Music 16C or equivalent.

181B Intermediate Jazz Improvisation (2) W. Continuation of beginning jazz improvisation which covers various 32-bar song forms, modal improvisation and more sophisticated blues forms. Studies the development of improvisation through history of jazz including composers Ellington, Monk, Morton, Mingus, Coltrane, Silver, and others. Prerequisite: Music 181A.

182 Advanced Jazz Combo (1) F, W, S. Small-group jazz ensemble and improvisational workshop. Range of music covered encompasses the full traditional jazz from improvised ragtime up through the most current avant-garde musical techniques. Prerequisite: consent of instructor. May be repeated for credit.

183A-B-C Jazz Composition (4-4-4) F, W, S. Performance and lecture course for writing and performing original jazz compositions. Emphasis is placed on composing as a way to create new improvisational frameworks. **183A:** Study of be-bop and hard-bop compositional methods centered on diatonic and dominant-motion harmonic structures. **183B**: Study of post-be-bop non-diatonic and modal structures. **183C**: Study of modern tonal-center compositions, intervallic compositions, and alternate rhythms. Prerequisites: Music 36A-B or 132, and 78A, 78B.

189 Accompanying for Plucked Strings: Continuo and Changes (2) F, W, S. Students apply theory to their instruments as they learn the basics of pre-1800 continuo playing and post-1900 jazz charts. Includes discussions of appropriate repertory, treatment of harmonic progressions, and finer points of style and technique. Prerequisite: Music 16C. May be repeated for credit.

191 Tutorial in Music (1 to 4) F, W, S. Independent supplemental instruction related to student's area of study. May be repeated for credit.

192J Junior Recital (0) F, W, S. Solo or joint public recital with departmental approval. Prerequisite: Music 16D. Open to Music majors only. Pass/Not Pass only.

192P Senior Project (0) F, W, S. Senior project for Music majors in the B.A. program. Pass/Not Pass only.

192S Senior Recital (0) F, W, S. Performance of solo public recital with departmental approval. The recital must include at least one work composed since 1945. Prerequisites: Music 16D; 40B-C-D or equivalent; and 155. Pass/Not Pass only.

193A-B Conducting (2-2). 193A: Introduces students to the basic technique employed in the practice of conducting. **193B:** Application of advanced conducting techniques, score study, and leadership skills. Prerequisites: Music 16D and 40B-C-D or equivalent.

195A-B Senior Thesis (2-2). 195A: With consultation in regularly scheduled meetings, students identify and study relevant texts and materials and prepare a prospectus for an original thesis. Prerequisite: senior standing in the Honors Program in Music and Culture. In-progress grading. **195B:** Students submit an outline and preliminary drafts of section of their thesis to the instructor, on a schedule supervised by the instructor. The final version will address the instructor's comments and criticisms. Prerequisite: Music 195A.

197 Word and Music (2). Performance class for advanced singers and pianists with emphasis on collaborative approach to vocal literature. Prerequisite: consent of instructor. May be repeated for credit.

199 Independent Study (2) F, W, S. Research, writing, or composition work, under the guidance of a faculty member. Prerequisite: consent of instructor. May be taken for credit two times.

GRADUATE

200 Bibliography and Research (4). Required of all entering students. A systematic introduction to the bibliographical tools both in the general field of music and in the students' areas of specialization. May be repeated for credit.

201A-B Analysis (4-4). Various approaches to analysis through concentrated study of a number of selected works.

210 Choral Conducting (4) F, W, S. Intensive private instruction and study of the various choral literatures. May be taken for credit six times.

211 Performance (4) F, W, S. Contents vary according to the student's major instrument. Intensive private instruction and study of the various literatures. May be taken for credit six times.

212 Composition (4) F, W, S. Intensive work in composition geared to each student's level of competence. May be repeated for credit.

213 Orchestral Conducting (4) F, W, S. Intensive private instruction in instrumental conducting. Authorization of instructor required. May be repeated for credit.

214 Graduate Recital (0) F, W, S. Performance of public recital. Satisfactory/Unsatisfactory only. May be taken for credit two times.

215 Music Technology (4) F, W, S. Studies in the history, literature, composition, and performance of electronic and computer music, including instruction in the theory and usage of prevalent music technology. May be repeated for credit.

220 Seminar in Music History (4)

230 Seminar in Contemporary Music (4). Special seminar projects dealing with music of the twentieth century with emphasis on analytical techniques and style criticism. May be repeated for credit as topics vary.

231 Open Improvisation (4) F. Introduces the practice and history of open improvisation in diverse fields of Western music since 1950. Performance projects and group critiques; weekly reading and listening assignment; participation in a class concert; and a research paper.

232 Advanced Improvisational Harmony (4) S. Knowledge of jazz chord symbols. Study of harmony used in modern improvisation. Issues covered include upper extension theory, tonal-center improvisation, and polychord progressions. Emphasis is placed on compositional methods for generating improvisational structures.

233 Black Music (4) F. Introduces questions of aesthetics, historiography, philosophy, and political economy in relation to Black music traditions. Topics center mostly on the United States, but also include other locations and transcultural forms. Students complete weekly assignments and a research paper.

235 Critical Studies in Music (4). A critical examination of Western music traditions, institutions, and aesthetics, employing new scholarship in music and new critical studies in other disciplines. May be repeated for credit.

239 Thesis Colloquium (2) W. Presentation of current research/creative activity. Second-year ICIT students present their thesis work-in-progress for discussion and criticism. Faculty and visiting artists/scholars also present their current work. Students are graded on their presentation and informed participation in critiques.

240 Graduate Projects (4) F, W, S. Substantial projects in performance, conducting, or composition (other than those specifically required for the degree), accompanied by a summary paper. May be repeated for credit.

250 Directed Reading (4). Individual research projects, resulting in the writing of a substantial paper pertaining to the principal area of concentration. May be repeated for credit.

399 University Teaching (1 to 4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF STUDIO ART

3229 Art, Culture and Technology Building; (949) 824-6648
Miles Coolidge, **Department Chair**

Faculty

Kevin Appel, M.F.A. University of California, Los Angeles, *Professor of Studio Art* (painting)

Ed Bereal, Chouinard Art Institute, *Senior Lecturer with Security of Employment Emeritus, Studio Art*

Juli Carson, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Studio Art and Director of the University Art Gallery* (contemporary art history, critical and curatorial studies)

Miles Coolidge, M.F.A. California Institute of the Arts, *Department Chair and Associate Professor of Studio Art* (photography)

Beatriz da Costa, Diplôme National Supérieur d' Expression Plastique, École d' Art d' Aix-en-Provence, *Associate Professor of Studio Art and of Electrical Engineering and Computer Science* (robotic art, tactical media, biotech initiatives, urban ecologies, surveillance projects, collaborative practice, social change)

Tony DeLap, Claremont Graduate School, *Professor Emeritus of Studio Art*

Martha Gever, Ph.D. City University of New York, *Associate Professor of Studio Art* (video/cultural/critical studies)

Bryan Jackson, M.F.A. University of California, Los Angeles, *Lecturer in Studio Art* (video, digital multimedia)

Ulysses Jenkins, Jr., M.F.A. Otis Parsons Art Institute, *Director of the Interdisciplinary Program in African American Studies and Associate Professor of Studio Art* (video)

Craig Kauffman, M.F.A. University of California, Los Angeles, *Professor Emeritus of Studio Art*

Antoinette LaFarge, M.F.A. School of Visual Arts, *Associate Dean of the Claire Trevor School of the Arts and Associate Professor of Studio Art* (digital media)
Simon Leung, B.A. University of California, Los Angeles, *Professor of Studio Art* (new genres, critical theory, contemporary art history)
Joseph S. Lewis III, M.F.A. Maryland Institute, College of Art, *Dean of the Claire Trevor School of the Arts, Professor of Studio Art, and Claire Trevor Dean's Endowed Chair* (post studio non-media specific)
Mara Lonner, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (drawing, sculpture)
Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (critical and queer theory, feminism, photography)
Monica Majoli, M.F.A. University of California, Los Angeles, *Assistant Professor of Studio Art* (painting, drawing)
Daniel Joseph Martinez, B.F.A. California Institute of the Arts, *Professor of Studio Art* (new genres, photography, sculpture, post-tactical media, text installation, public intervention, performance)
Yong Soon Min, M.F.A. University of California, Berkeley, *Professor of Studio Art* (sculpture, cultural studies)
Gifford C. Myers, M.F.A. University of California, Irvine, *Professor of Studio Art* (sculpture, ceramic sculpture)
Robert Nideffer, M.F.A., Ph.D. University of California, Santa Barbara, *Professor of Studio Art* (electronic intermedia, interface theory and design, contemporary social theory, game culture and technology)
Deborah Oliver, M.F.A California Institute of the Arts, *Lecturer in Studio Art* (performance)
Simon Penny, Graduate Diploma in Sculpture, Sydney College of the Arts, New South Wales, *Professor of Electrical Engineering and Computer Science and of Studio Art* (robotic sculpture, interactive environments, electronic media, art practice history, and critical theory)
Yvonne Rainer, *UCI Distinguished Professor of Studio Art* (performance, film history)
Shelby Roberts, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)
Connie Samaras, M.F.A. Eastern Michigan University, *Professor of Studio Art* (photography, media and film criticism, gender studies, culture and technology)
David Trend, M.F.A. State University of New York, Buffalo (Visual Studies Workshop); Ph.D. School of Education, Miami University, *Professor of Studio Art* (video, photography, visual studies, curriculum)
Bruce Yonemoto, M.F.A. Otis Art Institute, *Professor of Studio Art* (video, multimedia, film theory)

The Department of Studio Art takes a wide-ranging, interdisciplinary view of contemporary art practice. The Department emphasizes a demanding, conceptual approach to work in process in addition to traditional notions of product. Students are encouraged to develop an individual, disciplined direction through an experimental approach to media, materials, and techniques. To further this end, the curriculum provides studio experiences in drawing, painting, sculpture, ceramics, photography, digital imaging, and video, in addition to emphasizing cultural studies in relation to contemporary practice. Visiting artists and theorists who teach on a quarterly basis, or who make shorter guest appearances, are an integral part of the program.

The University's Education Abroad Program offers students the opportunity to study abroad. Graduate-level study also is available.

CAREERS FOR THE STUDIO ART MAJOR

Departmental faculty and the range of artists whose work is represented in the University Art Gallery exhibitions provide diverse career models. Some graduates go on to careers as exhibiting artists or teachers; others work in arts-related activities in museums, galleries, and artists' organizations. A bachelor's degree in Studio Art is usually required as preparation for graduate-level study in studio art.

REQUIREMENTS FOR THE B.A. DEGREE IN STUDIO ART

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements for the Major

Studio Art 1A, B, C (taken the first year in residence); Studio Art 9A, 9B, and 11A; one course from Art History 40A, 40B, 40C, 42A, 42B, or 42C; four lower-division courses selected from Studio Art 20–99; upper-division courses totaling 44 units as follows: three intermediate-level courses with no more than two in one area (Studio Art 102–115); five advanced or project courses (Senior Thesis Exhibition [Studio Art 198] and four other courses chosen from Studio Art 100, 101, 130–195, 199); three issues courses (Studio Art 116–129).

Sample Program for Freshmen

Fall	Winter	Spring
Studio Art 1A	Studio Art 1B	Studio Art 1C
Art History	Lower-Div. Studio Art	Lower-Div. Studio Art
Writing 39B	General Education	General Education
	Writing 39C	General Education

Concentration in Game Culture and Technology

The concentration in Game Culture and Technology is available to currently enrolled students majoring in Studio Art, Information and Computer Science, Informatics, and Computer Science. It exposes advanced students to an influential and expanding sector of media culture and contemporary art and technology practice, facilitates students' media literacy in relation to an increasingly prevalent art and entertainment form, and enables students to be more critical consumers and producers of new media art and culture.

Selection Process. Students may apply for admission no earlier than the end of their freshman year, and no later than the end of their junior year. Students will be selected by a competitive review process which occurs at the end of spring quarter. Each applicant must submit the following materials to the Program Director, c/o their School's Student Affairs Office: (1) a written statement of purpose; (2) portfolio or project samples that demonstrate an interest in the area; and (3) transcripts of UCI and other college course work. Applicants will be notified of the selection process outcome by the beginning of the fall quarter. A maximum of 12 students will be admitted per year in an effort to ensure access to Game Culture and Technology Laboratory research and development facilities in the Claire Trevor School of the Arts, Calit2, and the Institute for Software Research (ISR), all of which may be used to support student projects.

Requirements. Students must complete a total of eight courses (32 units) from within the two schools, which may also be used to satisfy existing requirements.

A. Three courses (12 units): Studio Art 106B (Game Studies), 130B (Topics in Game Design), and Computer Science 113/ Informatics 125 (Computer Game Development).

B. Three courses (12 units) chosen from Studio Art 106A (Programming for Artists), 130A (Projects in New Technologies), 130C (World Building), Informatics 43 (Informatics Core Course III) or ICS 52 (Introduction to Software Engineering), Informatics 121 (Software Design I), 131 (Human-Computer Interaction), 132 (Project in Human-Computer Interaction and User Interfaces), Computer Science 112 (Computer Graphics), 171 (Introduction to Artificial Intelligence), 175 (Project in Artificial Intelligence).

C. Two courses (8 units) chosen from Studio Art 197 (Internship), 199 (Independent Study), Computer Science H198 (Honors

Research), 199 (Individual Study), Informatics H198 (Honors Research), and 199 (Individual Study).

Departmental Requirements for the Minor

Studio Art 1A, B, C; Studio Art 9A, B, C; three lower-division studio classes in three media (Studio Art 20–99); five upper-division courses divided as follows: one from intermediate-level courses (Studio Art 102–115) with no repetition of any course; one from issues courses (Studio Art 116–129); one from advanced or project courses (Studio Art 100, 101, 130–195, 199); plus two additional upper-division courses selected from any of these groups.

Honors in Studio Art

The Honors in Studio Art program gives qualifying students a more rigorous course of study in contemporary art practices, thus challenging superior students beyond the scholarly requirements demanded of the Studio Art major. This program is designed to further develop students' critical, analytical, research, and technical skills. It is particularly suited to those wishing to go on to graduate school and/or exhibition careers.

Eligibility requirements are (1) one year in good standing as a Studio Art major; (2) completion of Studio Art 9A, 9B, 11A, and four lower-division courses from Studio Art 20–99; and (3) an overall GPA of 3.2 or higher with a GPA of at least 3.4 in Studio Art courses.

Admission to the honors program is competitive. Students may be admitted as early as the winter quarter of their sophomore year but no later than the spring quarter of their junior year. Upon completion of eligibility requirements, students will schedule a portfolio review with the Studio Art Honors Committee. Each quarter students will meet with their assigned faculty mentor to review the previous quarter's GPA.

Beyond fulfilling regular courses for the Studio Art major, honors students must complete three additional courses selected from Studio Art 100–191. In addition, all honors students must complete the Special Topics in Honors Exhibition course (Studio Art 100). This course prepares students for a mandatory, group interdisciplinary honors gallery exhibition to take place during either the winter or spring quarter of the students' matriculating year, at which time students will defend their thesis work to Honors Committee faculty.

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Studio Art

Graduate emphases in Feminist Studies and in Asian American Studies are also available. (Refer to the Program in Women's Studies section or the Department of Asian American Studies section of the *Catalogue* for information.)

General Information and General Degree Requirements

The program is designed to provide intensive professional training for independently motivated students wishing to pursue careers in the field of contemporary art. Rather than traditional ideas of subject and technique, experimental and interdisciplinary approaches to art making are emphasized. Students undergo a rigorous course of study combining seminar classes, intensive critique courses, and independent study. The seminars cover a range of critical issues dealing with the relationship of culture to contemporary art and are designed for students interested in theoretically positioning their art practices within an interdisciplinary framework. All incoming students must take the First-Year Graduate Seminar in preparation for further course work. As students progress in the program, they are required to take a series of additional seminars aimed at training them to develop research skills and a written component augmenting their culminating thesis exhibitions. Various approaches to developing text and word are considered, and students are encouraged to approach developing the thesis textual component following a path best suited to their postgraduate interests (e.g., critical writing, spoken word/performance, critical memoir, digital narrative structures).

The overall emphasis in the program, however, is on studio production. Throughout their three years, students must take a series of critique seminars. Work-in-progress, produced for the given quarter's critique class, is intensively discussed within a group context. Students must also, throughout their graduate careers, work each quarter on an independent basis with faculty of their choice and are encouraged to work with a range of faculty members. During the second year, students must select a thesis committee with whom they will work closely on the development of both thesis studio production and research interests. However, even after selecting their committee, students are still encouraged to work with a range of faculty on an independent basis in order to continue to respond to and reflect on a diversity of ideas and differing approaches to both studio production and art distribution systems. Throughout the first two years, students must also undergo a series of progress checks including open studio reviews and a second-year exhibition. Students are evaluated by faculty committees during their first and second years. Satisfactory opinion by these committees coupled with both satisfactory independent study evaluations and grades of at least a B or above will allow the student to progress to candidacy for the degree. During the third year, candidates must mount a thesis exhibition. In tandem with the final thesis exhibition, students are required to do a public presentation on their work as part of their final defense before their thesis committee.

During the first two years, students are required to take courses from a structured curriculum totaling 12 units each quarter. Beyond that, students can select additional course work from any sector of the Department or University including approved upper-division undergraduate courses. The third year is structured so that students can individualize their course of study through a wide selection of classes. For example, students wishing to focus primarily on studio production can do so through a combination of independent studies and critique classes, or students could design their third year to focus both on studio production and acquiring additional course work in a given research area or graduate emphasis.

The normative time to degree for students in the M.F.A. program is three years. Residence is required. The maximum time to degree is four years. Students who do not complete the degree in four years will be dropped from the program.

M.F.A. candidates are each provided with an individual studio space. Facilities include photography laboratories (analog and digital), video production studios, data laboratories, and sculpture laboratories for work in wood and metal. There are also facilities to support work in digital media, painting, performance, drawing, and ceramics. Students also have regular opportunities to exhibit in two galleries.

Various programs of visiting artists and lecturers are an integral part of the student experience. There is a public lecture series for which solicited graduate student input is considered an important component. Visiting artists, curators, critics, and gallerists are invited to give lectures and conduct studio visits with graduate students. The Studio Art 220 seminar (required both first and second year) incorporates visiting lecturers into a colloquium setting where students are asked to lead in-depth discussions with a given visitor. In addition to artists and curators, Studio Art 220 visiting lecturers include faculty from the UCI campus as well as other UC campuses whose work and research may be of interest to graduate students. Some Studio Art faculty, in addition to their departmental appointment, are affiliated with other UCI and UC programs, e.g., Asian American Studies, African American Studies, Women's Studies, Engineering, Information and Computer Science, Critical

Studies, Art History, the Cal-(IT)^2 Gaming Studies Initiative, and the UC Institute for Research in the Arts (UCIRA).

Admission

Applicants for admission to the M.F.A. program must meet the general requirements for admission to graduate study, hold a B.A. or B.F.A. in Art, have completed one year of twentieth-century art history (students who have not completed this will be required to do so as part of their graduate studies), and submit by January 15 a portfolio of their most recent creative work of a maximum of 20 images, to fit within an overall image size of 1,024 pixels wide by 768 pixels high, white or black borders. Files should be submitted as a single PDF document. A short incisive statement about the work is required. Normally, anyone who has earned an M.F.A. degree in Studio Art will not be considered for admission into the program.

Specific Degree Requirements

One hundred and twelve units over a three-year course of study are required. Residency is required. Students must take a minimum of 12 units per quarter.

First Year: First-Year Graduate Seminar (Studio Art 210), Methods and Materials Workshop (Studio Art 211), Graduate Seminar: Interdisciplinary Studies in Art and Culture (Studio Art 215), Graduate Seminar: Issues in Contemporary Art (Studio Art 220), Graduate Group Critique (Studio Art 230 all three quarters), and Interdisciplinary Projects (Studio Art 240 all three quarters).

Second Year: Career Development Workshop (Studio Art 212), Graduate Seminar: Interdisciplinary Studies in Art and Culture (Studio Art 215) **or** Graduate Topics in Studio Production (Studio Art 236), Graduate Seminar: Issues in Contemporary Art (Studio Art 220); Graduate Group Critique (Studio Art 230 two quarters); Interdisciplinary Projects (Studio Art 240 two quarters); Graduate Research Seminar (Studio Art 260); Graduate Thesis Writing Seminar (Studio Art 261); and Graduate Thesis, Independent Study (Studio Art 262).

Third Year: Graduate Group Critique (Studio Art 230); Graduate Thesis, Independent Study (Studio Art 262 all three quarters); Graduate Thesis, Exhibition Critique (Studio Art 263); two courses selected from the following: Graduate Seminar: Interdisciplinary Studies in Art and Culture (Studio Art 215), Graduate Seminar: Issues in Contemporary Art (Studio Art 220), Graduate Topics in Digital Media (Studio Art 234), Graduate Topics in Studio Production (Studio Art 236), Directed Reading and Research (Studio Art 250), Directed Group Study (Studio Art 251), Graduate Interdisciplinary and Collaborative Projects (Studio Art 255), Curatorial Projects (Studio Art 257), Cooperative Program and/or Studies Abroad (Studio Art 269), University Teaching (Studio Art 399) or outside seminar (over two quarters); **and** two courses selected from Interdisciplinary Projects (Studio Art 240), University Teaching (Studio Art 399), or outside seminar (over two quarters).

Courses in Studio Art

***(Schedule of Classes* designation: Art Stu)**

LOWER-DIVISION

1A, B, C Topics in Visual Culture: Foundation Projects (4, 4, 4). Approaches to postwar art and culture. Solving visual problems and developing understanding of how gender, sexuality, race, nationality influence contemporary cultures. Examines individual's relation to being an artist, encouraging experimentation rather than repeating received ideas. **(IV)**

9 Contemporary Art and Visual Culture

9A Media, Art, and Technology (4) F. Addresses key themes in the Studio Art Department curriculum: the relationship between art and culture; concepts of audience; differing functions of media forms; new information and communication technologies; education and democracy; issues of identity, difference, and globalization. **(IV)**

9B Visiting Artists (4) W. Combines lectures on the various histories and contexts of contemporary art with guest speakers currently working in the field. **(IV)**

9C Thematic Investigation (4) S. A thematic investigation into modern and contemporary art (1945–present). **(IV)**

11A History of Contemporary Art (4) S. Surveys critical thought that has influenced twentieth-century art production, preparing the student to engage contemporary art with a critical eye, specifically addressing aesthetic and political debates of the historical avant-garde, the neo-avant garde, and post-modern culture. Prerequisites: Studio Art 9A, 9B. **(IV)**

11B Media Art and Design History (4). Survey of the roots of modern techno-media arts in both the history of visual arts and the history of devices such as automata, animatronics, robots, miniature theatres, optical machines, communications technologies, calculators, and computers.

20 Basic Drawing (4). Encourages an investigation of the premises and limits of drawing, primarily, but not inevitably, as a two-dimensional medium. Includes slide presentations and discussions of the historical uses of a wide range of drawing. **(IX)**

30A-B Basic Painting I, II (4-4). Examination of the fundamental components of painting: color, form, space, surface, scale, and content. Studio work, slide presentations, and critiques of student work. Open to Studio Art majors only. **(IX)**

40 Basic Sculpture (4). The practice of sculpture in the contemporary arts; inclusion of spatial interventions, site-specific and environmental design, appropriation of found materials; techniques in cutting, joining, and assembly of wood, metals, and plastics. May include casting, welding, and ceramics. Materials fee. **(IX)**

51 Basic Ceramic Sculpture (4). Exploration of use of clay as sculptural basis with an emphasis on development of an idea and its relation to contemporary and experimental art practice. Hand-building, glazing, finishing processes, and use of other structural materials. Materials fee. **(IX)**

65A Foundations in Media Design (4). Provides an overview of media design in the digital age, covering principles of design for different media (2D, time-based, interactive); history of relationship between art and design; and practice in working with different design approaches. Materials fee.

65B Foundations in Internet Art and Design (4). Introduction to creating art for the Internet, covering history and structure of networks; key types of net-based interactivity; basics of Web design and scripting. Prerequisites: Studio Art 11B and 65A. Materials fee. Formerly Studio Art 65C.

71A Introduction to Photography I (4). Introduction to technical underpinnings emphasizing photography as a contemporary art practice. Topics include 35 mm. non-automatic camera operation, exposure and lighting, black and white printing, introduction to digital photography, discussion of critical and historical issues. Materials fee. **(IX)**

71B Introduction to Photography II (4). Techniques covered include: medium and large format cameras, digital photography, studio lighting, digital and analog color printing, mural room. Conceptual direction is developed through critiques, critical readings, discussions, slide lectures. Materials fee. Prerequisite: Studio Art 71 or 71A. **(IX)**

81A Video Production (4). Introduction to the three production stages of video making. Study of the narrative structure of cinema and acquisition of video production skills in camera, lighting, sound, and editing. Production work, readings, and screenings outside of class are assigned. Materials fee. Formerly Studio Art 81. **(IX)**

81B Video Stage Production (4). Focuses on video production, technical skills including: camera operation, stage lighting, sound recording, and construction of basic scenic elements. Emphasis is placed on the function and responsibilities of the production crew and proper working and safety procedures. Materials fee. Prerequisite: Studio Art 81A. **(IX)**

91 Basic Performance Art (4). Exploration of objects, gesture, action, text, image, and media to create narrative or non-narrative works. Elements of theory and history of performance art are discussed to illustrate techniques and styles. The goal is to understand, identify, and articulate your artistic vision and voice. May be taken for credit twice. **(IX)**

UPPER-DIVISION

100 Special Topics in Studio Art (4). Prerequisites: Studio Art 9A, B and 11A. May be taken for credit six times as topics vary. Materials fee, topic dependent.

101 Artists as Writers (4). Contemporary art practice involves text, as final form or an integral element. Many contemporary artists consider writing as essential to their practice. Covers historical and contemporary uses of text and image as well as artists' writings. Prerequisites: Studio Art 9A, B and 11A, or consent of instructor; and, when offered for upper-division writing: satisfactory completion of the lower-division writing requirement.

102 Intermediate Drawing (4). Continuation of the investigation initiated in Studio Art 20, with an emphasis on experimentation, personal investigation, and the development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C and 20 or consent of instructor. May be taken for credit twice.

103 Intermediate Painting (4). Continuation of the investigation initiated in basic painting, with an emphasis on experimentation, personal investigation, development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C and 30A-B. May be taken for credit twice.

104 Intermediate Sculpture (4). Investigation of three-dimensional space, including the construction of objects and the manipulation of the environment. Students define personal projects and translate personal, social, and political experience into visual meaning. Range of artists' works introduced. Group discussion and critiques. Materials fee. Prerequisites: Studio Art 1A-B-C and 40 or consent of instructor. May be taken for credit twice.

105 Intermediate Ceramic Sculpture (4). Further investigation of the use of clay as a medium, with emphasis on experimental practice and the relationship to contemporary visual art. Emphasizes discussion of ideas, and provides information on clay body, fabrication, glazing, and firing. Materials fee. Prerequisites: Studio Art 1A-B-C and 51 or consent of instructor. May be taken for credit twice.

106A Programming for Artists (4). Covers programming as a means to create interactive artworks with an emphasis on the integration of video, sound, text, and stills. Topics include basic concepts in programming, understanding the limits of code, working with video and audio files, interface design. Prerequisite: Studio Art 65B; Studio Art 11B recommended. May be taken for credit twice.

106B Game Studies (4). Critical analysis of various genres of computer games and gaming theory and practice through playing, writing, and discussion. The focus is on creating a Design Document for the student's own gaming environment using gaming metaphors, design principles, and technologies. Prerequisite: Studio Art 65A; Studio Art 11B recommended. Formerly Studio Art 135.

106C Design for Print (4). Investigates the use of print for communication as an artist. Covers the fundamentals of print design and output using digital media. Materials fee. Prerequisite: Studio Art 65A; Studio Art 11B recommended; or consent of instructor. May be taken for credit twice.

107 Intermediate Projects in Photography (4). Students begin learning how to develop photographic projects of their own making. Focuses on employing and expanding upon previously learned technical and critical skills specific to students' individual interests and ideas. Critiques, readings, lectures, labs. Materials fee. Prerequisites: Studio Art 1A-B-C, and 71 or 71A-B. May be taken for credit twice.

108 Intermediate Video Projects (4). Students learn how to conceive, develop, and produce original video works building directly upon previously learned skills. Use of the video stage and post-production editing facilities. Lectures on video and film subjects, production strategies, readings, screening, field trips, and group critiques. Materials fee. Prerequisites: Studio Art 81A-B; senior Studio Art majors only. May be taken for credit twice.

109 Intermediate Performance Art (4). Continued investigation of the concepts and history of experimental performance art, including its relation to contemporary artistic practice. Continues to refine technical skills, as well as space, audiences, and cultural connections. Prerequisites: Studio Art 1A-B-C; Studio Art 91 or consent of instructor. May be taken for credit twice.

111 3D Methods and Materials (4). Presents a wide variety of concepts, materials, tools, and fabrication techniques vital to art production. Wood tools, clay, castable rubber, urethane foam, fiberglass, plaster, steel, and welding are introduced. Student projects are based on conceptual problems incorporating these materials. Materials fee. Prerequisites: Studio Art 1A-B-C. May be taken for credit twice.

116 Feminist Issues in Studio Art (4). Feminist perspectives and topics in relation to cultural production. Feminist debates on sexuality, perspectives on women of color, on race and gender, feminist film criticism, histories of the first and second waves of feminism, histories of feminist art. Prerequisites: Studio Art 9A, B and 11A. May be taken for credit twice.

117 Issues in Popular Culture (4). In-depth investigation of the relationship between visual art practices and popular culture. Prerequisites: Studio Art 9A, B and 11A. May be repeated for credit as topics vary.

119 Issues in Contemporary Painting (4). Investigation of issues in modern and contemporary art work and criticism, wherein an assessment of Modernist influences is followed by the examination of contemporary painting as a cross-disciplinary practice employing popular culture, "high art," theory, and new technology. Prerequisites: Studio Art 9A, B and 11A. May be taken for credit twice.

120 Issues in Narrative (4). Emphasizes the construction of narratives in different media—painting, photography, sculpture, video. Particular attention paid to the development of personal and community histories as a working base. Prerequisites: Studio Art 9A, B and 11A. May be taken for credit twice.

121 Issues in Race and Representation (4). Emphasizes the construction of racial difference and stereotyping in the visual and performing arts, and on the histories of cultures and artists who functioned outside the contemporary mainstream. Readings assigned. Prerequisites: Studio Art 9A, B and 11A. May be taken for credit twice.

121A, B Afro-futurism (4, 4). Futuristic artistic visions of black film, video, and cyberspace which create Afro-futurism. African American diasporic cultural retention in modern techno-culture; digital activism; and dreams of designing technology based on African aesthetic principles are addressed. Prerequisites: Studio Art 9A, B and 11A.

123A Issues in the New Culture Wars (4). The term "culture wars" originally described Reagan/Bush era political efforts launched over matters like abortion, religion, gay rights, school curricula. Such controversies provided motivation and content for many artists. Addresses new culture wars emerging since 9/11 over privacy, technology globalization, terrorism. Prerequisites: Studio Art 9A, B and 11A.

123B Issues in Media, Violence, and Fear (4). Violence has been a key ingredient in story-telling throughout history in art, literature, religion, and entertainment. The continuing presence of media violence has provoked debates among parents, politicians, media producers, and academics. Examines history, theory, aesthetics, economics, and politics of violent representation.

125 Issues in Photography (4). Rigorous investigation of photographic practices and critical writings, the relationship of photography to the construction and maintenance of cultural institutions, the circulation of photographic ideas in society, and photography and technology. Prerequisites: Studio Art 9A, B and 11A. May be taken for credit twice.

126A Tactical Media (4). Overview of tactical media as a practice and its theoretical influences. Emerged in post-Cold War Europe in early 1990s. Tactical use of media and activism are point of reference for tactical media groups worldwide.

126B Issues in Techno-Arts (4). Addresses issues related to artmaking practices that emerge in tandem with new technologies. Topics include sociopolitical contexts of techno-art; utopic/dystopic framings; key moments in the history of techno-arts. Prerequisite: Studio Art 11B.

127A Issues in Video History and Criticism (4). Investigation of historical development of video as an artistic practice. Topics include relationships between art and video technology, artists' critiques of television, experimentation with image processing and synthesis, performances designed for video, experiments in documentary representation, video installation. Readings and screenings assigned. Prerequisites: Studio Art 81A and 81B. Materials fee.

127B Issues in Experimental Film History (4). A critical study of experimental film/video art genres and production techniques considering their narrative, structural, iconographic, and cultural aspects. Hollywood narrative, Nouvelle Vague, American Independent, and Video Art are compared in terms of production innovation, design, and conceptual content. Prerequisite: Studio Art 127A. Materials fee.

128 Issues in New Genres (4). Investigates issues in post-studio practices, including concepts of time, relational aesthetics, site-specificity, institutional critique, and the post-medium condition. Prerequisites: Studio Art 9A, B and 11A. May be repeated for credit as topics vary.

130A Projects in New Technologies (4). Working with media such as electronic still cameras, desktop publishing, faxes, satellites, virtual reality, digitized imaging. Cultural issues pertinent to the emergence of new technology (e.g., ethical concerns, social impact, copyright laws, nontraditional approaches to distribution, cyberpunk, global markets). Prerequisites: Studio Art 11B and 65A; Studio Art 106A strongly recommended. May be repeated for credit as topics vary. Formerly Studio Art 130.

130B Topics in Game Design (4). Investigates interaction paradigms, game mechanics, game development processes, and methods for analysis and critique of games; and provides opportunities for experimental game design. Prerequisite: Studio Art 106B.

130C World Building (4). Interdisciplinary approaches to working across the digital/nondigital boundary to create an alternative universe. Emphasis is on critical thinking, comprehensive planning, integration of multiple media, and narrative development. Prerequisites: Studio Art 11B and 65A; Studio Art 106A strongly recommended. May be taken for credit twice. Formerly Studio Art 138.

131 Projects in Installation (4). Investigates interior installation in particular spaces. Working in teams, students install, discuss, and remove projects. Technical information and hands-on experience with various media is provided. Prerequisites: two intermediate courses or consent of instructor. May be repeated for credit as topics vary. Materials fee.

132A Projects in Video Pre-Production (4). Examines the preparatory and planning stages of video production, including script writing, story boarding, location scouting, script breakdown, and budgeting. Projects may encompass one or more of these stages which will be explored through readings, discussions, and demonstrations. Materials fee. Prerequisites: Studio Art 81A-B. May be repeated for credit as topics vary.

132B Projects in Video Post-Production (4). Examines procedures and techniques utilized in video production after principal shooting is completed, including effects processing, composting, sound design, and DVD authoring. Projects focus on one or more of these processes, which will be explored through readings, discussions, and demonstrations. Prerequisites: Studio Art 81A-B. May be taken for credit twice. Materials fee.

141 Projects in Video Installation (4). Incorporating narrative structures in a multi-screen context. Students design and produce an active space in which activities will move from one screen to another. May be taken for credit twice. Materials fee.

143 Projects in Computer Painting (4). Study and utilization of the computer as a digital sketchbook and design tool for the creation of paintings. Discussion of the issues related to benefits and limitations of new technology in the art-making process. Prerequisite: Studio Art 30, 103, or consent of instructor.

146 The Artist in the Archive (4). Considers data storage, retrieval systems, technology, secrets, disparate collections, and forgetting. Focuses on artists who prefer their information in quantity and who use or construct databases to structure and/or generate their work. Prerequisites: Studio Art 1A-B-C; 9A, B and 11A.

149 Multimedia and the Arts in the Multicultural Classroom (4) F, W, S. Multiculturalism and underrepresented U.S. minorities and the visual and performing arts: perspectives in artistic perception, creative expression, historical and cultural context, and aesthetic valuing, and media literacy in the interpretation and production of multimedia arts products and applications for K–12 classrooms. Same as Education 104E. **(VII)**

150 Advanced Studio Topics/Painting (4). Provides an intensive and specialized working environment. Thematic issues and material strategies explored. Prerequisites: Studio Art 30A-B and 103 or consent of instructor. May be repeated for credit as topics vary.

150C Advanced Drawing (4). Advanced studio problems for visual exploration. Students pursue individual solutions to self-defined and presubscribed projects. Techniques/materials are individual choice. Continual analysis of the personal process. Prerequisites: Studio Art 20, 102. May be repeated for credit with consent of instructor.

150F Advanced Figure Drawing (4). Students develop technical skills in rendering the figure. Live model sessions and an introduction to anatomy. Also investigates use of the figure in contemporary art. Prerequisite: Studio Art 102. May be taken for credit twice. Materials fee.

151 Advanced Studio Topics/Sculpture (4). Provides an intensive and specialized working environment. Thematic issues and material strategies will be explored. Prerequisites: two intermediate courses and consent of instructor. Materials fee. May be repeated for credit as topics vary.

152A Advanced Studio Topics/Photography (4). Focused investigation of a range of issues in photographic practice, with an emphasis on developing individual student projects, refining critical thinking, and conceptual framing, Technical topics covered as required. Readings, lectures, critiques, labs. Materials fee. Prerequisites: Studio Art 71A-B. May be repeated for credit.

152B Documentary Photography (4). Documentary practice is examined through the realization of photo-based projects. Thematic focus of student's choosing is refined through lectures, discussions, technical demonstrations, field trips, labs, and individual meetings. Materials fee. Prerequisites: Studio Art 71A-B or consent of instructor. May be repeated for credit.

152C The Public Image (4). Strategies for artistic intervention in the public circulation of images are examined alongside the role images play in constructing public identity. Individual or collaborative student projects are directed around course themes. Materials fee. Prerequisites: Studio Art 71A-B or consent of instructor. May be repeated for credit.

152D The Photographic Tableau (4). Examines and develops photographic projects intended for traditional artistic venues (i.e., galleries and museums). In addition to exploring appropriate techniques and presentation strategies, students consider the interdependency between construction of images and semantic shaping of traditional art venues. Materials fee. Prerequisites: Studio Art 71A-B or consent of instructor. May be repeated for credit.

152E The Constructed Image (4). A studio investigation of theoretical ideas, critical possibilities, historical precedents, and various techniques involving the production of fabricated images. Techniques may include montage, digital, chemical and in-camera manipulations, studio constructions, appropriations, performance, and projected images. Materials fee. Prerequisites: Studio Art 71A-B or consent of instructor. May be repeated for credit.

152F Seminar Production Component (4). Photographic and/or inter-media production course tied to a specific Issues course (for example, Issues in Photography, Issues in Feminism, Issues in Urban Space). Critiques, labs, field trips, discussion, demonstrations. Materials fee. Prerequisites: Studio Art 71A-B or consent of instructor. May be repeated for credit.

153 Advanced Studio Topics/Video (4). The class will be directed to the production of individual or collaborative videotapes, using studio, portable camera, and editing facilities and sound and computer elements. Emphasis will be on individually initiated projects. Readings and screenings are assigned. Materials fee. Prerequisites: Studio Art 108 or consent of instructor. May be repeated for credit as topics vary.

154 Advanced Studio Topics/Performance (4). An intensive investigation of the practice of performance art, with an emphasis on th development of individual projects, and the refinement of various technical skills, as well as audiences, spaces, and cultural connections. Prerequisite: Studio Art 109 or consent of instructor. May be repeated for credit as topics vary.

156 Advanced Studio Topics/Ceramic Sculpture (4). Discussion of ideas, techniques, and personal control of form. Clay body, fabrication, glazing, and firing. Emphasis on development of personal direction. Prerequisites: Studio Art 105. Materials fee. May be repeated for credit with consent of instructor.

166A Advanced Collaborative Projects in Video (4). Original video projects produced in collaborative teams combining advanced video students with teams of students from other areas of study, including Drama, Dance, and Music. Shoots may be carried out on the video stage as well as field locations. Prerequisites: Studio Art 1A-B-C, 81A-B, and 108 or consent of instructor. May be taken for credit twice.

190 Senior Project and Critique (4). Directed-study critique class in preparation for final project and life after graduation; documentation and portfolio preparation for graduate school. Investigation of exhibition spaces and funding opportunities, participation in artists' communities outside the university, artists' rights issues. Prerequisite: senior standing. May be repeated for credit as topics vary.

190B Senior Projects and Critique in Photography (4). Directed group study focused on production of photographic projects of significant scope and ambition. Emphasis on preparation for continued study and/or practice in photography in advanced settings beyond the undergraduate university experience. Materials fee. Prerequisites: Studio Art 71A-B; 107; and senior standing.

190C Senior Projects and Critique in Video (4). Directed group study focused on production and exhibition of individual video projects of significant scope and ambition. Emphasis is placed on critical evaluation. Assignments include work documentation, preparation for graduate school, and investigation of future opportunities outside the University. Prerequisites: Studio Art 1A-B-C, 81A-B, 108, 132A or 132B, 141 or 153; senior standing. May be taken for credit twice.

191 Studio Problems: Methods and Materials (4). An open media discussion and critique course emphasizing the development of working ideas and the execution of projects in all media. Readings assigned as required; field trips, slide and film/video presentations are integral. Prerequisites: two intermediate courses. May be repeated for credit as topics vary.

197 Studio Art Internship (1 to 4). Under faculty supervision, students participate directly in a variety of art institution settings, including museums, galleries, and nonprofit organizations. Pass/Not Pass only. Prerequisites: junior standing, consent of instructor, and consent of department chair. May be taken for credit twice.

198 Senior Exhibition (4). Preparation, installation, and participation in the annual senior exhibition. Pass/Not Pass only. Prerequisite: senior Studio Art majors only.

199 Independent Study (1 to 4). Individual study or directed creative projects as arranged with faculty member. Prerequisite: consent of instructor. May be repeated for credit. Materials fee, topic dependent.

GRADUATE

210 First-Year Graduate Seminar (4) F. Introductory theory to contemporary art: intellectual history, theoretical antecedents, and current critical concerns. Prerequisite: graduate standing.

211 Methods and Materials Workshops (2) F, W, S. Comprised of a series of workshops introducing graduates to production and facilities in photography, video, digital media, and sculpture. Prerequisite: graduate standing. *May be offered only once during academic year.*

212 Career Development Workshop (2) F, W, S. Workshop for various aspects of career development including but not limited to grant writing, writing a C.V., applying to teaching jobs, working with museums and galleries, working in/with public, not-for-profit, and community arts. Prerequisite: graduate standing.

215 Graduate Seminar: Interdisciplinary Studies in Art and Culture (4) F, W, S. In-depth discussion of contemporary art production in relation to a variety of theoretical, cultural, and historical topics, Material is determined by the given instructor's current research interests. Prerequisites: graduate standing and Studio Art 210. May be repeated for credit as topics vary.

220 Graduate Seminar: Issues in Contemporary Art (4) F, W, S. Classroom interaction with artists, curators, critics, lecturers from fields outside of the arts or from cross-disciplines. Includes recommended readings, discussions, panel participation, writing assignments. Prerequisites: graduate standing and Studio Art 210. May be taken for credit three times.

230 Graduate Group Critique (4) F, W, S. Focus on studio production. Students are expected to help foster and develop an environment in which serious and sophisticated peer critique can take place. Prerequisite: graduate standing. May be taken for credit nine times.

236 Graduate Topics in Studio Production (4) F, W, S. Graduate group study of a specific medium or art practice (e.g., painting; video, installation, photography, sculpture/3-D, performance, digital media, public art, sound art; film). Includes consideration of technical, theoretical, historical, and/or formal issues. Prerequisite: graduate standing. May be repeated for credit as topics vary.

240 Interdisciplinary Projects (4) F, W, S. Intensive faculty-led discussion of in-progress graduate studio projects—can be discipline driven or working across fields in a rigorous interdisciplinary studio environment where students meet with the professor both individually and in small groups. Prerequisites: graduate standing and consent of instructor. May be repeated for credit.

250 Directed Reading and Research (4) F, W, S. Independent study with a supervising faculty member to direct academic research, develop bibliographies, and discuss assigned readings. Prerequisites: graduate standing and consent of instructor. May be repeated for credit as topics vary.

251 Directed Group Study (4) F, W, S. Directed reading and/or study group on a given research topic. Agreed-upon meeting structure may be flexible in order to accommodate off-campus field trips and travel. Prerequisite: graduate standing. May be repeated for credit as topics vary.

255 Graduate Interdisciplinary and Collaborative Projects (4) F, W, S. For graduate students working collaboratively across the School of the Arts (including the ACE specialization) or cross-university. May be team taught with one of the faculty members based in the Department of Studio Art. Prerequisite: graduate standing. May be repeated for credit as topics vary.

257 Curatorial Projects (2 to 8) F, W, S. Independent or group study for graduates working on or developing curatorial projects. Prerequisite: graduate standing. May be repeated for credit.

260 Graduate Research Seminar (4) F, W, S. Preparatory course for researching written thesis and thesis exhibition defense. Includes library research, developing bibliographies, methodologies. Students are expected to develop an abstract for their thesis topic. Prerequisites: graduate standing and Studio Art 210, 215, and 220.

261 Graduate Thesis Writing Seminar (4) F, W, S. Seminar for writing as a component of the thesis. Different models of writing, text, and spoken word are discussed. Corequisite: Studio Art 262. Prerequisites: graduate standing; Studio Art 210, 215, 220, 260.

262 Graduate Thesis Independent Study (1 to 4) F, W, S. Tutorials and directed study in thesis writing, research, and/or studio production with thesis committee chair and/or thesis committee members to be taken during final quarters of study. Corequisite: one section must be taken with Committee Chair in tandem with Studio Art 261 specifically to develop thesis writing. Prerequisites: graduate standing; consent of instructor; Studio Art 210, 215, 220, 260. May be repeated for credit.

263 Graduate Thesis, Exhibition Critique (4) F, W, S. Group critique required for matriculating M.F.A. students during the quarter in which their thesis exhibitions are scheduled. Public presentation/lecture on student's work required. Prerequisites: graduate standing; Studio Art 210, 215, 220, 230, 240, 260, 261, and 262.

269 Cooperative Program and/or Studies Abroad (12) F, W, S. For students undertaking a quarter of study at another UC campus or equivalent academic institution with which there is a cooperative arrangement with the UCI Department of Studio Art. Prerequisites: graduate standing; consent of instructors, Chair of Studio Art Graduate Studies Committee, and Chair of Department.

280 Contemporary Exhibition Systems (4) F, W, S. Investigates contemporary case studies of curatorial practice. Sometimes taught in collaboration with a host institution. The history, theory, and criticism of curatorial practice are tested through the explication of real exhibitions. May be taken for credit four times as topics vary.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants working under the active guidance and supervision of a regular rank faculty member responsible for curriculum and instruction at the University. Satisfactory/Unsatisfactory only. Prerequisites: graduate standing and consent of instructor. May be taken for credit for a total of 12 units.

Arts and Humanities

101 Mesa Arts Building: (949) 824-6646
Jennifer Fisher, **Co-Director (Arts)**
Carrie Noland, **Co-Director (Humanities)**

Core Faculty

Stephen Barker, Ph.D. University of Arizona, *Professor of Drama and Head of Doctoral Studies* (post-modern theatre, Beckett, critical theory)

David Brodbeck, Ph.D. University of Pennsylvania, *Department Chair and Professor of Music, and The Robert and Marjorie Rawlins Chair in Music* (nineteenth- and twentieth-century music, popular music studies)

Julia Bryan-Wilson, Ph.D. University of California, Berkeley, *Director of the Graduate Program in Visual Studies and Assistant Professor of Art History* (contemporary art, feminist and queer theory, craft history, performance, video art, artistic activism, coalitional politics)

Jennifer Fisher, Ph.D. University of California, Riverside, *Co-Director of the Arts and Humanities Major and Associate Professor of Dance* (dance history and theory, ethnography, performance studies)

Martha Gever, Ph.D. City University of New York, *Associate Professor of Studio Art* (video/cultural/critical studies)

Lynn Mally, Ph.D. University of California, Berkeley, *Professor of History* (modern Russian and Soviet history)

Ian Munro, Ph.D. Harvard University, *Associate Professor of Drama* (European drama and performance, early modern popular culture, theatrical performance of wit)

Carrie J. Noland, Ph.D. Harvard University, *Professor of French* (twentieth-century poetry, literature of the avant-garde, and performance studies)

James Penrod, M.F.A. University of California, Irvine; C.M.A. Laban Institute of Movement Studies, *Professor Emeritus of Dance* (ballet, modern, dance notation, choreography, movement analysis)

Frank B. Wilderson III, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and Drama* (film theory, Marxism, dramaturgy, black political theory)

The major in Arts and Humanities allows motivated students to create their own interdisciplinary major with one focus in the School of the Arts and the other in the School of Humanities. Students work toward a critical and historical mastery of aesthetic theories and practices while learning about the process of making creative work. This humanist background will equip students to participate more effectively as artists, citizens, and critics in a world where critical thinking and creativity are vital to success in a variety of work environments.

Arts and Humanities students investigate the symbolic dimension of human behavior and identity, an interest shared by many critics and artists alike. Often, this interest is expressed in the context of interdisciplinary programs designed to facilitate contact among faculty and students from a wide range of different academic disciplines. This major's focus on the connection between practice and analysis distinguishes it from the broader and more diverse scope of more general interdisciplinary programs. The scholarly work of many UCI faculty in the Arts and Humanities lies at an intersection between the two academic units, and the major translates this intellectual and creative activity into a coherent curriculum and projects current forms of scholarship and artistic practice into the classroom.

CAREERS FOR THE ARTS AND HUMANITIES MAJOR

There is a steadily growing market in private industry for students whose training combines skills sharpened by both the Arts and Humanities. Business demands graduates with strong writing and analytic skills, talents stressed in the Humanities. They also desire people with creativity and visual skills who have experience putting their original ideas into practice, something emphasized in the Arts. Graduates of this program will be very attractive to teacher-training programs, law schools, as well as academic Ph.D. programs. Additionally, graduates may find work in professional fields directly allied with the Arts, including museum work, art foundations, art criticism, journalism, theatre, and the entertainment industry.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Application Process for the Arts and Humanities Major

New students are not admitted directly to the Arts and Humanities major. Continuing students apply to change their major to Arts and Humanities no earlier than the fall quarter of their sophomore year. Complete information about changing majors to Arts and Humanities is available at http://www.changeofmajor.uci.edu. Students must submit a transcript and meet the change-of-major criteria for each of the two departments they propose to combine. In addition, a program of study, approved by the designated faculty member in the Claire Trevor School of the Arts and in the School of Humanities, is required for admission to the Arts and Humanities major. Students are strongly encouraged to consult with the Arts Student Affairs Office early in their decision to apply to Arts and Humanities.

REQUIREMENTS FOR THE B.A. DEGREE IN ARTS AND HUMANITIES

University Requirements: See pages 55–62.

School Requirements: None.

Requirements for the Major

Humanities 1A-B-C; a language other than English through 2C; one lower-division survey in a specialization in the Arts, chosen from Dance 90A-B-C, Drama 40A, B, C, Music 14A-B-C, Studio Art 9A, B, C; six units of "studio courses" in Dance, Drama, *or* Studio Art or six units of "ensemble courses" in Music; Arts and Humanities 100 (taken to satisfy upper-division writing), 101; 16 additional units of upper-division Arts courses focusing on a specific medium (e.g., photography) or practice (e.g., modern dance), and 16 additional units of upper-division Humanities courses focusing on a specific theme, region, or period, chosen with the approval of the Arts and Humanities faculty advisors. (Students must have their proposed program of study approved by their advisors each year.)

It is expected that students will choose their courses from one major in the Arts and one major in the Humanities. Students with well-developed interests can shape their curriculum more precisely to their needs.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Courses in Arts and Humanities

***(Schedule of Classes* designation: ArtsHum)**

100 The Arts in Theory and Practice (4). Writing seminar explores writings on art from different times and cultures. How have artists and critics in different cultural contexts tried to explain the principles and theories that guide their work? How can students use their concepts to assess art works? Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Humanities and Arts 100.

101 Topics in Arts and Humanities (4). This interdisciplinary course examines themes relevant to both the Arts and the Humanities. May be repeated for credit as topics vary. Same as Humanities and Arts 101.

199 Independent Study (1 to 4). Directed reading and research in consultation with a faculty member. Substantial written work required. May be repeated for credit as topics vary.

SCHOOL OF BIOLOGICAL SCIENCES

Albert F. Bennett, **Dean**

5120 Natural Sciences II
Undergraduate Counseling: (949) 824-5318
Graduate Programs:
Department of Ecology and Evolutionary Biology: (949) 824-4743
Combined Graduate Program in Cellular and Molecular Biosciences (CMB): (949) 824-8145
Department of Neurobiology and Behavior: (949) 824-8519
http://www.bio.uci.edu/

Faculty

Steven D. Allison, Ph.D. Stanford University, *Assistant Professor of Ecology and Evolutionary Biology and of Earth System Science*
Bogi Andersen, M.D. University of Iceland, *Professor of Medicine (Endocrinology) and Biological Chemistry*
Aileen J. Anderson, Ph.D. University of California, Irvine, *Director of the Christopher Reeve Paralysis Foundation Spinal Cord Injury Core Facility and Associate Professor of Physical Medicine and Rehabilitation and of Anatomy and Neurobiology*
Ruslan D. Aphasizhev, Ph.D. University of California, Berkeley, *Assistant Professor of Microbiology and Molecular Genetics*
Joseph Arditti, Ph.D. University of Southern California, *Professor Emeritus of Developmental and Cell Biology*
Kavita Arora, Ph.D. Bombay University, *Associate Professor of Developmental and Cell Biology*
Dana Aswad, Ph.D. University of California, Berkeley, *Professor of Molecular Biology and Biochemistry*
Peter R. Atsatt, Ph.D. University of California, Los Angeles, *Professor Emeritus of Ecology and Evolutionary Biology*
John C. Avise, Ph.D. University of California, Davis, *UCI Distinguished Professor of Ecology and Evolutionary Biology*
Francisco J. Ayala, Ph.D. Columbia University, *University Professor and Donald Bren Professor of Biological Sciences*
Pierre Baldi, Ph.D. California Institute of Technology, *Director of the Institute for Genomics and Bioinformatics and UCI Chancellor's Professor of Computer Science, Biomedical Engineering, Developmental and Cell Biology, and Biological Chemistry*
Kenneth M. Baldwin, Ph.D. University of Iowa, *Professor of Physiology and Biophysics*
Tallie Z. Baram, M.D. University of Miami, Ph.D. Weizmann Institute of Science (Israel), *Professor of Pediatrics, Neurology, and Anatomy and Neurobiology, and Danette (Dee Dee) Shepard Chair in Neurological Studies*
Alan G. Barbour, M.D. Tufts University School of Medicine, *Professor of Microbiology and Molecular Genetics, Medicine (Infectious Diseases), and Ecology and Evolutionary Biology*
Lee Bardwell, Ph.D. Stanford University, *Professor of Developmental and Cell Biology*
Albert F. Bennett, Ph.D. University of Michigan, *Dean of the School of Biological Sciences and Professor of Ecology and Evolutionary Biology*
Rudi C. Berkelhamer, Ph.D. University of California, Berkeley, *Associate Dean, Division of Undergraduate Education, and Senior Lecturer with Security of Employment, Ecology and Evolutionary Biology*
Hans-Ulrich Bernard, Ph.D. University Göttingen, *Professor of Molecular Biology and Biochemistry and of Public Health*
Michael W. Berns, Ph.D. Cornell University, *Professor of Surgery, Developmental and Cell Biology, and Biomedical Engineering, and Arnold and Mabel Beckman Chair in Laser Biomedicine*
Bruce Blumberg, Ph.D. University of California, Los Angeles, *Professor of Developmental and Cell Biology, Biomedical Engineering, and Pharmaceutical Sciences*
Hans R. Bode, Ph.D. Yale University, *Research Professor of Developmental and Cell Biology*
Emiliana Borrelli, Ph.D. University of Naples, *Professor of Microbiology and Molecular Genetics and of Pharmacology*
Peter A. Bowler, Ph.D. University of California, Irvine, *Director of the UCI Arboretum and Herbarium, UC Natural Reserve System Academic Coordinator, and Senior Lecturer with Security of Employment, Ecology and Evolutionary Biology*
Timothy J. Bradley, Ph.D. University of British Columbia, *Professor of Ecology and Evolutionary Biology*
Ralph A. Bradshaw, Ph.D. Duke University, *Professor Emeritus of Physiology and Biophysics*
Adriana D. Briscoe, Ph.D. Harvard University, *Associate Professor of Ecology and Evolutionary Biology*
Roy J. Britten, Ph.D. Princeton University, *Adjunct Professor of Ecology and Evolutionary Biology*
Peter J. Bryant, Ph.D. University of Sussex, *Professor of Developmental and Cell Biology*
Susan V. Bryant, Ph.D. University of London, *Professor of Developmental and Cell Biology*
Michael J. Buchmeier, Ph.D. McMaster University, *Professor of Medicine (Infectious Disease) and of Molecular Biology and Biochemistry*
Nancy Burley, Ph.D. University of Texas, Austin, *Professor of Ecology and Evolutionary Biology*
Jorge Busciglio, Ph.D. National University of Cordoba, *Associate Professor of Neurobiology and Behavior*
Robin M. Bush, Ph.D. University of Michigan, Ann Arbor, *Associate Professor of Ecology and Evolutionary Biology*
Michael D. Cahalan, Ph.D. University of Washington, *Department Chair and Professor of Physiology and Biophysics*
Lawrence F. Cahill, Ph.D. University of California, Irvine, *Associate Professor of Neurobiology and Behavior, Psychology and Social Behavior, and Cognitive Sciences*
Vincent J. Caiozzo, Ph.D. University of California, Irvine, *Professor in Residence, Departments of Orthopaedic Surgery and of Physiology and Biophysics*
Anne L. Calof, Ph.D. University of California, San Francisco, *Professor of Anatomy and Neurobiology and of Developmental and Cell Biology*
Diane R. Campbell, Ph.D. Duke University, *Professor of Ecology and Evolutionary Biology*
Richard D. Campbell, Ph.D. The Rockefeller Institute, *Professor Emeritus of Developmental and Cell Biology*
Thomas J. Carew, Ph.D. University of California, Riverside, *Department Chair and Donald Bren Professor of Neurobiology and Behavior*
F. Lynn Carpenter, Ph.D. University of California, Berkeley, *Professor of Ecology and Evolutionary Biology*
Paolo Casali, M.D. University of Milan, *Director of the Center for Immunology and Donald Bren Professor of Molecular Biology and Biochemistry and of Medicine (Immunology)*
Jefferson Y. Chan, M.D., Ph.D. University of California, San Francisco, *Associate Professor of Pathology and Laboratory Medicine*
K. George Chandy, Ph.D. University of Birmingham, M.B.B.S. Christian Medical College University of Madras, *Professor of Physiology and Biophysics and of Microbiology and Molecular Genetics*
Phang-Lang Chen, Ph.D. University of California, San Diego, *Associate Professor of Biological Chemistry*
Ken W.-Y. Cho, Ph.D. University of Pennsylvania, *Department Chair and Professor of Developmental and Cell Biology*
Olivier Cinquin, Ph.D. University College London, *Assistant Professor of Developmental and Cell Biology*
Olivier Civelli, Ph.D. Swiss Institute of Technology, *Professor, Departments of Pharmacology, Developmental and Cell Biology, and Pharmaceutical Sciences, and Eric L. and Lila D. Nelson Chair in Neuropharmacology*
Michael T. Clegg, Ph.D. University of California, Davis, *Donald Bren Professor of Biological Sciences and of Ecology and Evolutionary Biology*
Melanie Cocco, Ph.D. Pennsylvania State University, *Assistant Professor of Molecular Biology and Biochemistry*
Susana Cohen-Cory, Ph.D. Rockefeller University, *Associate Professor of Neurobiology and Behavior*
Carl Cotman, Ph.D. Indiana University, *Professor of Neurology, Neurobiology and Behavior, and Biomedical Engineering*
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Xing Dai, Ph.D. University of Chicago, *Associate Professor of Biological Chemistry*

Rowland H. Davis, Ph.D. Harvard University, *Professor Emeritus of Molecular Biology and Biochemistry*

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James H. Fallon, Ph.D. University of Illinois, *Professor Emeritus of Anatomy and Neurobiology*

Hung Fan, Ph.D. Massachusetts Institute of Technology, *Director of the Cancer Research Institute, Associate Director of the Chao Family Comprehensive Cancer Center, and Professor of Molecular Biology and Biochemistry*

Mark Fisher, M.D. University of Cincinnati, *Professor of Neurology and of Anatomy and Neurobiology*

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Norbert Fortin, Ph.D. Boston University, *Assistant Professor of Neurobiology and Behavior*

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Steven A. Frank, Ph.D. University of Michigan, *Professor of Ecology and Evolutionary Biology*

Ron D. Frostig, Ph.D. University of California, Los Angeles, *Department Vice Chair and Professor of Neurobiology and Behavior and Professor of Biomedical Engineering*

John P. Fruehauf, M.D. Rush University, *Associate Professor of Clinical Medicine (Hematology/Oncology), Biological Chemistry, and Biomedical Engineering*

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Sidney H. Golub, Ph.D. Temple University, *Professor Emeritus of Microbiology and Molecular Genetics*

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Franz Hoffmann, Ph.D. University of Hohenheim, *Senior Lecturer with Security of Employment, Developmental and Cell Biology*

Todd C. Holmes, Ph.D. Massachusettes Institute of Technology, *Associate Professor of Physiology and Biophysics*

Lan Huang, Ph.D. University of Florida, *Associate Professor of Physiology and Biophysics, Developmental and Cell Biology, and Biological Chemistry*

Taosheng Huang, M.D. Fujian Medical College, Ph.D. Mt. Sinai Medical School, *Associate Professor of Pediatrics (Human Genetics and Birth Defects) and of Developmental and Cell Biology*

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Keith Justice, Ph.D. University of Arizona, *Professor Emeritus of Biological Sciences*

Peter Kaiser, Ph.D. University of Innsbruck, *Associate Professor of Biological Chemistry*

Claudia H. Kawas, M.D. University of Louisville, *Professor of Neurology and of Neurobiology and Behavior, and Nichols Clinical Neuroscience Chair*

Hans S. Keirstead, Ph.D. University of British Columbia, *Co-Director of the Sue and Bill Gross Stem Cell Research Center and Associate Professor of Anatomy and Neurobiology and of Biological Sciences*

Herbert P. Killackey, Ph.D. Duke University, *Vice Provost for Academic Personnel and Professor of Neurobiology and Behavior and of Anatomy and Neurobiology*

Leonard M. Kitzes, Ph.D. University of California, Irvine, *Professor Emeritus of Anatomy and Neurobiology*

Daniel J. Knauer, Ph.D. University of Nebraska, *Professor Emeritus of Developmental and Cell Biology*

Natalia L. Komarova, Ph.D. University of Arizona, *Professor of Mathematics and of Ecology and Evolutionary Biology*

Harold Koopowitz, Ph.D. University of California, Los Angeles, *Professor Emeritus of Ecology and Evolutionary Biology*

Stuart M. Krassner, Sc.D. The Johns Hopkins University, *Professor Emeritus of Developmental and Cell Biology*

John J. Krolewski, M.D., Ph.D. New York University, *Professor of Pathology and Laboratory Medicine*

Frank LaFerla, Ph.D. University of Minnesota, *Director of the Institute for Memory Impairments and Neurological Disorders and UCI Chancellor's Professor of Neurobiology and Behavior*

Arthur D. Lander, M.D., Ph.D. University of California, San Francisco, *Director, Center for Complex Biological Systems and Professor of Developmental and Cell Biology and of Biomedical Engineering*

Thomas E. Lane, Ph.D. University of California, Los Angeles, *UCI Chancellor's Fellow and Professor of Molecular Biology and Biochemistry*

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Wen-Hwa Lee, Ph.D. University of California, Berkeley, *Donald Bren Professor of Biomedicine, Departments of Biological Chemistry and Pharmacology*

Howard M. Lenhoff, Ph.D. The Johns Hopkins University, *Professor Emeritus of Developmental and Cell Biology*

Michael Leon, Ph.D. University of Chicago, *Associate Dean of Undergraduate Affairs of the School of Biological Sciences and Professor of Neurobiology and Behavior*

Robert Leonard, Ph.D. University of Minnesota, *Adjunct Professor of Anatomy and Neurobiology*

Frances M. Leslie, Ph.D. Aberdeen University, *Dean of the Graduate Division and Professor of Pharmacology and of Anatomy and Neurobiology*

Ellis R. Levin, M.D. Jefferson Medical College, *Vice Chair for Academic Affairs, Department of Medicine, Chief of Endocrinology, and Professor in Residence, Departments of Medicine (Endocrinology), Pharmacology, and Biological Chemistry*

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Melissa Lodoen, Ph.D. University of California, San Francisco, *Assistant Professor of Molecular Biology and Biochemistry*

Anthony D. Long, Ph.D. McMaster University, *Professor of Ecology and Evolutionary Biology*

John Longhurst, M.D., Ph.D. University of California, Davis, *Associate Dean, School of Medicine; Director of the Susan Samueli Center for Integrative Medicine; Professor, Department of Medicine (Cardiology), Physiology and Biophysics, Pharmacology, and Biomedical Engineering; Lawrence K. Dodge Endowed Chair in Integrative Biology; and Susan Samueli Chair in Integrative Medicine*

Kenneth J. Longmuir, Ph.D. University of Oregon, *Associate Professor of Physiology and Biophysics*

Catherine Loudon, Ph.D. Duke University, *Lecturer with Security of Employment, Ecology and Evolutionary Biology*

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Andrej Luptak, Ph.D. Yale University, *Assistant Professor of Pharmaceutical Sciences and of Molecular Biology and Biochemistry*

Gary Lynch, Ph.D. Princeton University, *Professor of Psychiatry and Human Behavior, Cognitive Sciences, and Anatomy and Neurobiology*

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Rachel W. Martin, Ph.D. Yale University, *Assistant Professor of Chemistry and of Molecular Biology and Biochemistry*

Adam C. Martiny, Ph.D. Technical University of Denmark, *Assistant Professor of Ecology and Evolutionary Biology and of Earth System Science*

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Ronald L. Meyer, Ph.D. California Institute of Technology, *Professor of Developmental and Cell Biology*

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Donald F. Senear, Ph.D. University of Washington, *Department Vice Chair and Professor of Molecular Biology and Biochemistry*
Yongsheng Shi, Ph.D. Syracuse University, *Assistant Professor of Microbiology and Molecular Genetics*
Martin A. Smith, Ph.D. University of Newcastle Upon Tyne, *Professor of Anatomy and Neurobiology and of Biological Sciences*
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Arnold Starr, M.D. New York University, *Research Professor of Neurology*
Robert E. Steele, Ph.D. Yale University, *Interim Department Chair and Associate Professor of Biological Chemistry*
Oswald Steward, Ph.D. University of California, Irvine, *Professor of Anatomy and Neurobiology, Neurobiology and Behavior, and Neurosurgery, and Reeve-Irvine Chair in Spinal Cord Injury Research*
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Luis P. Villarreal, Ph.D. University of California, San Diego, *Director of the Center for Virus Research and Professor of Molecular Biology and Biochemistry*
Douglas C. Wallace, Ph.D. Yale University, *Director of the Organized Research Unit in Molecular and Mitochondrial Medicine and Genetics (MAMMAG) and Donald Bren Professor of Molecular Medicine, Biological Chemistry, and Ecology and Evolutionary Biology*
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Arthur E. Weis, Ph.D. University of Illinois, *Professor Emeritus of Ecology and Evolutionary Biology*
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Stephen H. White, Ph.D. University of Washington, *Professor of Physiology and Biophysics*
Dominik Wodarz, Ph.D. Oxford University, *Professor of Ecology and Evolutionary Biology and of Mathematics*
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Xiangmin Xu, Ph.D. Vanderbilt University, *Assistant Professor of Anatomy and Neurobiology*
Pauline Yahr, Ph.D. University of Texas, *Professor Emerita of Neurobiology and Behavior*
Guiyun Yan, Ph.D. University of Vermont, *Professor of Public Health and of Ecology and Evolutionary Biology*
Tau-Mu Yi, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Developmental and Cell Biology and of Biomedical Engineering*
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Fan-Gang (Frank) Zeng, Ph.D. Syracuse University, *Director of the Hearing and Speech Laboratory and Professor, Departments of Otolaryngology, Biomedical Engineering, and Anatomy and Neurobiology*
Yi-Hong Zhou, Ph.D. Dalhousie University, *Assistant Professor, Assistant Professor in Residenc and Departments of Neurological Surgery and Biological Chemistry*
Albert Zlotnik, Ph.D. University of Colorado, *Professor of Physiology and Biophysics*

Overview

This is the ideal time to be studying biology. We are solving problems today whose solutions were unimaginable even a few years ago, and implications for our society, our health, and our environment are profound. The School of Biological Sciences is dedicated to providing students with a unique course of study that fosters a deep appreciation for the exciting facts and concepts in the field, an education that allows graduates to excel in their chosen careers.

The School has recently redesigned the curriculum to remain on the cutting edge of biological education. All first-year students are introduced to basic concepts in ecology and evolutionary biology, as well as cellular and molecular biology. The core set of courses in biology continues into the second year, featuring genetics, biochemistry, and molecular biology, followed in the third and fourth year by a choice of advanced courses in biology. Since biology is a laboratory discipline, students complete a series of laboratory courses in which they learn both the techniques and approaches needed to solve problems in biology.

Finally, the faculty expect that most students will engage in cutting-edge research in one of more than 250 laboratories and medical clinics in the School of Biological Sciences and the UCI School of Medicine. It is in these situations that faculty train students to think in a sophisticated way about real-world problems. There is also no feeling of excitement greater than finding out something about the world that no one has ever known before, a feeling afforded in biology only by participation in research. The Excellence in Research Program allows students to present their work and be recognized for their performance with a series of awards and publication of their reports in the School's *Journal of Undergraduate Research.* The set of core classes that instructs students in the concepts of biology, the advanced classes that allow a deep understanding of specialized aspects of biology, the laboratory courses that convey the practical aspects of problem-solving in biology, and the research experiences that engage students in the real excitement in revealing new information about biology, come together to provide an extraordinary experience for students. The Honors Program in the School of Biological Sciences further enhances the educational experience for the best students.

Biology students have the option of specializing in areas of biology that best fit their interests, completing courses for degree programs in Biochemistry and Molecular Biology, Developmental and Cell Biology, Ecology and Evolutionary Biology, Genetics, Microbiology and Immunology, Neurobiology, or Plant Biology.

Those students who wish to receive a broader education in the area can opt to complete a major in Biological Sciences. Completion of any of these majors forms an excellent basis for application to either graduate or professional studies such as medical school, and graduates of the School of Biological Sciences are routinely accepted to the most prestigious programs in the country.

The quality of the faculty in the School of Biological Sciences has remained high while increasing steadily in number over the past few years, giving students a remarkable range of expertise in biology and with it, a large number of different advanced courses and research opportunities. In addition, their efforts have brought several high-impact research units to the campus, such as the Center for the Neurobiology of Learning and Memory, the Center for Virus Research, the Beckman Laser Institute, the Cancer Research Institute, the Developmental Biology Center, the Center for Immunology, the Institute for Memory Impairments and Neurological Disorders, the Macromolecular Structure Research Unit, the Organized Research Unit in Molecular and Mitochondrial Medicine and Genetics, the Institute for Genomics and Bioinformatics, and the Reeve-Irvine Research Center, all of which are accessible to undergraduates. The School of Biological Sciences also has close research and teaching collaborations with faculty in the Schools of Medicine, Physical Sciences, Social Ecology, and Social Sciences; the Donald Bren School of Information and Computer Sciences; and The Henry Samueli School of Engineering.

In addition to the regular University requirements for admission, students interested in the biological sciences should include in their high school curriculum, in addition to a course in biology, four years of mathematics, as well as courses in chemistry and physics, which are now an integral part of most contemporary biological work.

The School's professional counseling staff is always available for consultation to students regarding the many decisions in their academic program. They also are trained to provide guidance in the application process to both professional and graduate schools, a real advantage to the high proportion of students in the School of Biological Sciences who go on to pursue advanced degrees.

Opportunities are available at the graduate level to specialize in Anatomy and Neurobiology, Biological Chemistry, Developmental and Cell Biology, Ecology and Evolutionary Biology, Experimental Pathology, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, Neurobiology and Behavior, and Physiology and Biophysics.

DEGREES

Biochemistry and Molecular Biology	B.S.
Biological Sciences	B.S., M.S., Ph.D.
Developmental and Cell Biology	B.S.
Ecology and Evolutionary Biology	B.S.
Genetics	B.S.
Microbiology and Immunology	B.S.
Neurobiology	B.S.
Plant Biology	B.S.

HONORS

Honors Program in the School of Biological Sciences

The Honors Program in the School of Biological Sciences provides an opportunity for outstanding majors in the School to pursue advanced work in independent research via participation in the Excellence in Biological Sciences Research Program and earn Honors in Biological Sciences upon graduation. Admission to the program is based on an application to participate in the Excellence in Biological Sciences Research program filed during the middle part of the fall quarter of the year of the student's participation. Additionally, students must have a minimum overall 3.5 grade

point average and a minimum 3.5 grade point average in all required Biological Sciences courses. The Program requires a minimum of three quarters enrollment in research (Biological Sciences 199) including successful completion of Biological Sciences H195 and the Excellence in Biological Sciences Research program.

Graduation with Honors

Of the graduating seniors, no more than 12 percent will receive Latin honors: approximately 1 percent *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude.* The selection for these awards is based on spring quarter rank-ordered grade point averages. To be eligible for honors at graduation, the student must, by the end of spring quarter of the senior year, be officially declared a Biological Sciences major; submit an Application to Graduate by the end of winter quarter of the senior year; have completed at least 72 units in residence at a UC campus by the end of the spring quarter of the academic year in which they graduate; have all corrections to the academic record processed by the Registrar's Office by the end of spring quarter; if completing the Language Other Than English general education requirement with a language exemption test, pass the test by the end of spring quarter; and be able to verify completion of all course work by the end of the spring quarter of the senior year. Other important factors are considered (see page 52).

Excellence in Research Program

The School of Biological Sciences believes that successful participation in creative research is one of the highest academic goals its undergraduates can attain. Students enrolled in Undergraduate Research (Biological Sciences 199) and who meet the eligibility requirements have an opportunity to present the results of their research endeavors to peers and faculty. Those students awarded with "Excellence in Research" will then have their papers published in the School's *Journal of Undergraduate Research in the Biological Sciences.*

The program begins each fall with a series of instructional workshops and continues through spring with students completing a scientific paper, poster presentation, and scientific talk. Contact the Biological Sciences Student Affairs Office in 1011 Biological Sciences III or visit the Web site at http://www.bio.uci.edu/Excellence for additional information.

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

Dean's Honor List. The quarterly Dean's Honor List is composed of students who have received a 3.5 grade point average while carrying a minimum of 12 graded units.

Biological Sciences Honors, Scholarships, Prizes, and Awards

The following honors, scholarships, prizes, and awards are presented at the annual Biological Sciences Honors Convocation held in June.

Excellence in Research Award. Undergraduates who have successfully completed the requirements for this program are presented with Excellence in Research certificates.

Atwood Family Scholarship. The Atwood Family Scholarship is awarded to sophomore Biological Sciences majors who demonstrate outstanding achievement in both scholarship and service to the UCI community.

Robert H. Avnet Memorial Scholarship. The Robert H. Avnet Memorial Scholarship has been established to assist a student interested in becoming a physician. The student must be a Biological Sciences major and demonstrate financial need.

Carol Becker McGaugh Award. This award is given to a junior with outstanding research in the area of neurobiology of learning and memory.

Robert Ernst Prize for Excellence in Research in the Biological Sciences. This prize is awarded to a student for meritorious research conducted in the field of biology.

Robert Ernst Prize for Excellence in Student Research in Plant Biology. This prize is awarded to a student for meritorious research conducted in plant biology.

M. Marlene Godoy Award. This award is given to support a graduating senior in the Biological Sciences who is pre-medical or pre-dental. The recipient is one who is *actively* involved with philanthropic community service, University service, and in undergraduate research.

Dr. William F. Holcomb Scholarship. The intent of the Dr. William F. Holcomb Scholarship is to support biomedical or marine biological studies. The Scholarship is to be used to support continuing academic work over a specific period.

Leadership Scholars Program. This program was established by the Dean's Leadership Council for the School of Biological Sciences. The scholarship will support Biological Sciences majors who demonstrate academic and personal commitment to the School, University, and their local community.

Michael and Judy Leon Award. This award was established to support an exceptional Biological Sciences major who is graduating and has been accepted into a Ph.D. program (or has great likelihood of acceptance).

Laurence J. Mehlman Prize. The Laurence J. Mehlman Prize is awarded to an undergraduate student in the School of Biological Sciences who has demonstrated outstanding achievement in both scholarship and service to the School.

Edward Mittelman Memorial Fund Scholarship. The Edward Mittelman Memorial Fund Scholarship is presented to an outstanding Biological Sciences student who will pursue a career in the medical field.

Edward A. Steinhaus Memorial Award. The Edward A. Steinhaus Memorial Award is given to outstanding Biological Sciences graduate student teaching assistants who demonstrate promise as future educators.

Joseph H. Stephens Award for Outstanding Research in Ecology and Conservation. This award is granted to a graduate student who has demonstrated outstanding research in ecology and conservation.

Joseph H. Stephens Award for Outstanding Research in Biochemistry and Molecular Biology. This award is granted to an graduate student who has demonstrated outstanding research in biochemistry and molecular biology.

Jayne Unzelman Scholarship. The Jayne Unzelman Scholarship is presented to an undergraduate student who has shown academic excellence and been of service to the School of Biological Sciences and/or the University, and to the community.

Special Service Awards. These awards are given to students who have demonstrated great service to the School, the University, and/or community.

UNDERGRADUATE PROGRAMS

ADMISSION TO THE MAJOR IN BIOLOGICAL SCIENCES

In the event that the number of students who elect Biological Sciences as a major exceeds the number of positions available, applicants may be subject to screening beyond minimum University of California admissions requirements.

Freshmen: Preference will be given to those who rank the highest using the selection criteria as stated in the Undergraduate Admissions section of this *Catalogue.*

Transfer students: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete one year of general chemistry with laboratory with grades of B or better; one year of biology courses equivalent to Biological Sciences 93, 94, and 100L at UCI with a grade of C or better in each course; and have a cumulative GPA of 3.0 or higher.

No student may enter as a double major, but Biological Sciences students interested in other areas may apply to become double majors after the first quarter, if the second school or program approves. A strong academic performance in the second area is requisite for acceptance as a double major.

CHANGE OF MAJOR

Students who wish to declare any major within the School of Biological Sciences should contact the Biological Sciences Student Affairs Office in 1011 Biological Sciences III for information about change-of-major requirements, procedures, and policies. Information can also be found at http://www.changeofmajor.uci.edu. Change of Major petitions are accepted and reviewed by the School throughout the year.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

All School of Biological Sciences students must complete the following requirements.

University Requirements: See pages 55–62.

School Requirements

Biological Sciences 194S; Biological Sciences Core 93, 94, 97, 98, 99, 100L; Chemistry 1A-B-C, 1LB-LC or H2A-B-C, 1LB-1LC; Chemistry 51A-B-C, 51LA-LB or 52A-B-C, 52LA-LB; Mathematics 2A-B and one course selected from Statistics 7, 8, Mathematics 2D, 2J, or 7; Physics 3A-B-C, 3LB-LC or 7C-D-E, 7LC-LD.

Prerequisites for all Biological Sciences Core courses are rigorously enforced. Students must have a 2.0 cumulative grade point average in the Biological Sciences Core Curriculum, four upper-division elective courses, and three upper-division laboratories.

School Residence Requirement: After matriculation, all courses required for the major must be successfully completed at UCI. The School of Biological Sciences strictly enforces the UCI residence requirement. At least 36 of the final 45 units completed by a student for the bachelor's degree must be earned in residence at the UCI campus. (The School considers courses taken in the Education Abroad Program to be in-residence courses.)

Undergraduate Major in Biological Sciences

The Biological Sciences major presents a unified, in-depth study of modern biology. The Biological Sciences Core is a five-quarter series of courses ranging from ecology and evolutionary biology, to genetics, biochemistry, and molecular biology. Important laboratory techniques and methodology are presented in upper-division laboratories. Advanced elective courses provide an opportunity to continue to diversify students' exposure to the biological sciences or to gain a much more in-depth study of a particular area of the biological sciences.

NOTE: Biological Sciences majors who successfully complete their second year of study may elect to apply for a change of major to one for the following: Biochemistry and Molecular Biology, Developmental and Cell Biology, Genetics, Microbiology and Immunology, Neurobiology, or Plant Biology. Students may apply directly to the Ecology and Evolutionary Biology major when they apply for admission to UCI. Contact the Biological Sciences Student Affairs Office for more information.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOLOGICAL SCIENCES

University Requirements: See pages 55–62.

School Requirements: See this page, to the left.

Major Requirements

A. *Required Major Courses:* Three courses selected from Biological Sciences D103, D104, D105, E106, E109, N110.

B. *Upper-Division Laboratories:* Three laboratories required. At least two selected from Biological Sciences D111L, E112L, E115L, E166, M114L, M116L, M118L, M121L, M122L, M124L, N113L; one laboratory can be satisfied with E179L, E161L, E172L, Pharmaceutical Sciences 174L, Chemistry 177L, or completion of Excellence in Research in the Biological Sciences.

C. *Upper-Division Biology Electives:* Four upper-division, four-unit courses selected from Biological Sciences D103–D190, E106–E190, M114–M190, N110–N190, Pharmaceutical Sciences 170A, 170B, 171, 173, 174, Chemistry 177. Biological Sciences D103, D104, D105, E106, E109, N110 may not be used to satisfy more than one requirement. Chemistry 130A-B-C or 131A-B-C or Physics 147A-B can be used to partially satisfy the Upper-Division Biology Elective Requirement. Additionally, Psychology/Biological Sciences double majors may also use Psychology 112A-B-C to partially satisfy the Upper-Division Biology Elective Requirement.

NOTE: Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Concentration in Biological Sciences Education

The optional concentration in Biological Sciences Education requires eight courses: Biological Sciences 14, 101, 102, Physics 20A, 20B, Earth System Science 1, 7, and one course selected from Education 108, 124, 128, 131, 136, or 173.

The requirements for a general Biological Sciences B.S. degree for students in this concentration will be reduced by one upper-division laboratory course (major requirement B) and two upper-division biology electives (major requirement C). Students pursuing other majors within the School of Biological Sciences will need specific departmental approval for the reduction of degree requirements when completing this concentration.

Requirements for the Minor in Biological Sciences

Nine courses are required, no more than two of which may be taken on a Pass/Not Pass basis:

A. Three courses selected from Biological Sciences 93, 94, 97, 98, and 99. (Prerequisites are strictly enforced. Exceptions may be made for some majors that accept the above courses for degree requirements. Consult with the Biological Sciences Student Affairs Office or the academic counseling office of the major.)

B. Six three- or four-unit courses selected from Biological Sciences 5–H90 (excluding 46), 93–99, 100L, and D103–D190, E106–E190, M114–M190, N110–N190. Three courses must be upper-division. Prerequisites are strictly enforced. (Courses used to satisfy group A may not also be used to satisfy group B.)

Residence requirement for the minor: A minimum of six courses required for the minor must be completed at UCI. Approved courses taken in the Education Abroad Program are considered to be in-residence courses.

NOTE: Students in any of the majors within the School of Biological Sciences, Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences may not minor in Biological Sciences.

PLANNING A PROGRAM OF STUDY

Since biological sciences courses are built upon a base of the physical sciences, it is very important for students to take their required physical sciences early, particularly general and organic chemistry. Students who have not completed high school chemistry are well advised to complete a preparatory chemistry course before entering UCI. The academic program shown is only a suggested program. Students should consult the Biological Sciences Student Affairs Office for individual academic planning.

Freshmen will normally take Humanities 1A or lower-division writing courses, Chemistry 1A, Biological Sciences 93, and a freshman seminar (Biological Sciences 2A) during the fall quarter. Students will then continue with Biological Sciences 94, complete their general chemistry requirement, and continue with Humanities or lower-division writing during the remaining winter and spring quarters.

Sophomores begin organic chemistry (Chemistry 51A or 52A), continue the Biological Sciences Core with 97, 98, 99, and 100L; students enrolling in 100L must have completed or be concurrently enrolled in Biological Sciences 97 and 194S. Sophomores often begin taking courses in other disciplines to meet the UCI general education requirement and fulfill their mathematics requirement if they have not done so as freshmen.

During their junior year, most majors continue with the Biological Sciences electives and take physics. Students who intend to double major in Chemistry will be required to take Physics 7C-D-E in place of Physics 3A-B-C. Juniors may complete their general education requirements and usually start their research and their upper-division biology laboratory courses.

Finally, during their senior year, students continue their research and complete their remaining major requirements.

Students in the Biological Sciences major are required to make progress toward their degree, and their progress will be monitored. If normal academic progress toward the degree in Biological Sciences is not being met, students will be subject to probation.

Sample Program — Biological Sciences

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	Humanities 1C
Humanities 1A[1]	Humanities 1B	Math. 2A
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2B	Stats. 7 or 8 or	Bio. Sci. 100L[3]
Bio. Sci. 194S	Math. 2D or 2J or 7	
Junior		
Required Major course	Required Major course	Required Major course
Physics	Physics	Physics
Elective/Research[5]	Elective/Research	Bio. Sci. elective[4]
		Elective/Research
Senior		
Bio. Sci. elective	Bio. Sci. elective	Bio. Sci. elective
Bio. Sci. U-D Lab	Bio. Sci. U-D Lab	Bio. Sci. U-D Lab
Elective	Research	Research
	Electives	Electives

1 Students have the option of taking Humanities 1A or lower-division writing courses.

2 Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

3 Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking the three upper-division labs.

4 In addition to the listed Biological Sciences elective courses, Chemistry 130A-B-C or 131A-B-C, Physics 147A-B, and Psychology 112A-B-C (for Biological Sciences/Psychology double majors) are counted as Biological Sciences elective courses.

5 Electives should be chosen with the following purposes in mind: UCI general education requirements; students' own breadth; preprofessional training.

Undergraduate Major in Biochemistry and Molecular Biology

Few areas of Biological Sciences remain that are not impacted by studies at the chemical and molecular level. The major in Biochemistry and Molecular Biology is designed to provide a comprehensive background in this modern, conceptual understanding of biology. Students who wish to begin in-depth study of the molecular basis in any of a variety of fields, including development, gene expression, immunology, pathogenesis, disease, virology, and evolution, can do so through this major. This program will be especially attractive to those students who intend to pursue an advanced degree in biological or medical sciences.

The Biochemistry and Molecular Biology major is based upon required courses in Advanced Biochemistry and Advanced Molecular Biology (Biological Sciences M114 and M116). These courses, together with a wide variety of elective course offerings, provide majors the choice to either explore the breadth of the field or follow a more in-depth study of any of its subdisciplines. For students interested in the interface between biology and chemistry, this program articulates well with a second major in Chemistry.

The program of study emphasizes laboratory experience and its integration with basic theory. This is accomplished in three ways: first, through coordination between the advanced courses in Biochemistry (M114) and Molecular Biology (M116), and laboratory courses in Biochemistry (M114L) and Molecular Biology (M116L) which provide students with the basic laboratory skills and an appreciation for the experimental foundations of the field; second, through advanced laboratories in Immunology (M121L) and Virology (M124L) which provide students with the opportunity to develop cutting edge research skills; and third, by emphasizing

independent research sponsored by a participating faculty member. The program encourages the research interests of students in subdisciplines other than immunology or virology by offering the opportunity to substitute one year of independent research for the advanced laboratory.

The major in Biochemistry and Molecular Biology is designed to provide students with the appropriate tools and training to successfully pursue graduate degrees that emphasize basic scientific research, including Ph.D. and M.S. training as well as combined M.D./Ph.D. programs. In addition, and particularly with the explosive growth in biotechnology and its significant influence in everyday life, graduates could use their backgrounds very effectively to pursue careers in business, education, law, and public affairs.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

University Requirements: See pages 56–62.

School Requirements: See page 129.

Major Requirements

A. *Required Major Courses*: Biological Sciences M114 and M116.

B. *Upper-Division Laboratories*: Biological Sciences M114L, M116L, and one additional laboratory selected from M121L, M124L, or one year of research (Biological Sciences 199) approved by the Biochemistry and Molecular Biology Faculty Board.

C. *Upper-Division Biology Electives*: Four courses selected from Biological Sciences D137, M120–M189, Chemistry 128, 130A-B-C, or 131A-B-C (two of the four must be from Biological Sciences). Two additional four-unit courses selected from Biological Sciences D103–D190, E106–E190, M120–M190, N110–N190, or Chemistry 128, 130A-B-C, or 131A-B-C. No course may be used to satisfy more than one requirement.

Application Process to Declare the Major: The major in Biochemistry and Molecular Biology is open to junior- and senior-level students only. Applications to declare the major can be made at any time, but typically in the spring of the sophomore year. Review of applications submitted at that time and selection to the major by the Biochemistry and Molecular Biology Faculty Board is completed during the summer. Information can also be found at http://www.changeofmajor.uci.edu. Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Sample Program — Biochemistry and Molecular Biology

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	Humanities 1C
Humanities 1A[1]	Humanities 1B	Math. 2A
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2B	Stats. 7 or 8 or	Bio. Sci. 100L[3]
Bio. Sci. 194S	Math. 2D or 2J or 7	General Ed./Elective
Junior		
Bio. Sci. M114L	Bio. Sci. M114	Bio. Sci. M116
Biochem./Mol. elective	Biochem./Mol. elective	Biochem./Mol. elective
Bio. Sci. U-D lab/research	Bio. Sci. U-D lab/research	Physics 3C, 3LC
Physics 3A	Physics 3B, 3LB	
Senior		
Biochem./Mol. elective	Bio. Sci. elective or lab	Bio. Sci. elective
Bio. Sci. M116L	Research/Elective	Bio. Sci. M121L/ M124L or research
Research/Elective	General Ed./Elective	Research/Elective
General Ed./Elective		General Ed./Elective

[1] Students have the option of taking Humanities 1A or lower-division writing courses.

[2] Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

[3] Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking upper-division labs.

Undergraduate Major in Developmental and Cell Biology

The Developmental and Cell Biology major is intended to provide students with intensive training in cutting edge approaches to understanding the structure and function of cells and how they interact to produce a complex organism, starting with a fertilized egg. The focus of the B.S. in Developmental and Cell Biology is to provide students with intensive training aimed at preparing them for graduate programs in modern Developmental and Cell Biology or other biomedical sciences. In-depth training in the molecular basis of cell and developmental biology will be coupled with integrating knowledge obtained from the recent explosive advances in genomic technology to provide a strong working understanding of how to approach problems in basic research.

The major has distinctive features. The first is a reduction in the number of required courses, allowing students the opportunity to focus more deeply on training in Developmental and Cell Biology. The second is the implementation of a new course in Genomic and Proteomic analysis that is closely tied to problems in genetics, developmental, and cell biology. Understanding the connections among these disciplines and how to apply the appropriate tools for defining and answering fundamental questions in biomedical research is a critical tool for success in research. Another distinctive feature of the major is the opportunity to replace two upper-division laboratory courses with mentored Biological Sciences 199 individual research in faculty laboratories. This offers students the opportunity to apply the tools they have acquired during formal course work to current problems at the frontiers of research. Lastly, students majoring in Developmental and Cell Biology have faculty advisors with whom they meet at least quarterly. The faculty advisors help students plan their curriculum, select appropriate 199 projects and sponsoring labs, and as a group grant petitions and certify the degree. The combination of new upper-division courses, more flexibility in the curriculum, the option for mentored research, and close interaction with faculty advisors will help the Developmental and Cell Biology majors to develop an appreciation of the nature of research and establish a strong foundation for future success in graduate or professional schools.

REQUIREMENTS FOR THE B.S. DEGREE IN DEVELOPMENTAL AND CELL BIOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 129.

Major Requirements

A. *Required Major Courses:* Biological Sciences D103, D104, D114, and D145.

B. *Upper-Division Laboratories:* Biological Sciences D111L and two selected from E112L, E115L, E166, M114L, M116L, M118L, M121L, M122L, M124L, N113L. Students may petition to substitute Excellence in Research (Biological Sciences 199) for two upper-division laboratories (other than D111L);

199 research is strongly encouraged. The 199 laboratory must be approved by the Department, and Excellence in Research must be successfully completed. Final approval is given by the Department.

C. *Upper-Division Biology Electives:* one from Biological Sciences D136, D137, D148; one from Biological Sciences D151, M144; and three from Biological Sciences D105, D129, D130, D134, D136, D137, D143, D148, D151, E109, E141, E157, M114, M116, M125, M137, M144, M151, N110, N153, N154.

Application Process to Declare the Major: The major in Developmental and Cell Biology is open to junior- and senior-level students only. Applications to declare the major can be made at any time. Information can also be found at http://www.changeofmajor.uci.edu. Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Sample Program — Developmental and Cell Biology

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	Humanities 1C
Humanities 1A[1]	Humanities 1B	Bio. Sci. 194S
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2A	Math. 2B	Math. 2D or 2J or 7, or Stats. 7 or 8
Junior		
Bio. Sci. D103	Bio. Sci. D104	Bio. Sci. D111L
Physics 3A	Physics 3B, 3LB	Physics 3C, 3LC
Bio. Sci. 100L[3]	Bio. Sci. D145	Bio. Sci. D114
General Ed.		General Ed.
Senior		
U-D Lab or Bio. Sci. 199	U-D Lab or Bio. Sci. 199	U-D Lab or Bio. Sci. elective
U-D Bio. Sci. elective	U-D Bio. Sci. elective	U-D Bio. Sci. elective
U-D Bio. Sci. elective	Bio. Sci. 199 research or General Ed.	Bio. Sci. 199 research or General Ed.

[1] Students have the option of taking Humanities 1A or lower-division writing courses.

[2] Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

[3] Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking upper-division labs.

Undergraduate Major in Ecology and Evolutionary Biology

It has famously been said that nothing in biology makes sense except in the light of evolution. This major is designed to allow students to make sense of biology. It is a broad major, including components of evolutionary biology, ecology, and physiology. Faculty interests are also broad and include the evolution of aging, conservation biology, biogeography, plant and animal population and community ecology, the evolution of infectious disease, evolutionary physiology, behavioral ecology, host-disease interactions, evolutionary genetics, marine ecology, genetics of invasive species, and plant population biology. Following graduation students will be especially well prepared to enter graduate programs in either ecology or evolution for advanced study. The major also provides the foundation to pursue careers in governmental and non-governmental environmental organizations, as well as professional schools. The Department considers undergraduate experience in research an integral component of a scientific education, and majors are encouraged to participate in Biological Sciences 199 in which they will be mentored by an individual faculty member within the Department.

REQUIREMENTS FOR THE B.S. DEGREE IN ECOLOGY AND EVOLUTIONARY BIOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 129.

Major Requirements

A. *Required Major Courses:* Statistics 8 and Biological Sciences E106 and E107.

B. *Upper-Division Laboratories:* Biological Sciences E115L, E166, and one selected from Biological Sciences D111L, E112L, E161L, E172L, E179L, M114L, M116L, M118L, M121L, M122L, M124L, N113L.

C. *Upper-Division Biology Electives:* one from Biological Sciences D103, D104, D105, E109, N110; and three four-unit courses from Biological Sciences E118–E190. Biological Sciences 199 Research is strongly encouraged.

Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Sample Program — Ecology and Evolutionary Biology

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Bio. Sci. E106
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Humanities 1A[1]	Humanities 1B	Humanities 1C
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2A	Math. 2B	Stats. 8
Bio. Sci. 194S		Bio. Sci. 100L[3]
Junior		
Bio. Sci. E166	U-D Bio. Sci. elective	Bio. Sci. E115L
Physics 3A	Physics 3B, 3LB	Physics 3C, 3LC
Bio. Sci. research	Bio. Sci. research	U-D Bio. Sci. elective
General Ed.		Bio. Sci. research
Senior		
Bio. Sci. E107	U-D Bio. Sci. elective	U-D Bio. Sci. elective
U-D Lab	Bio. Sci. research	General Ed.
Bio. Sci. research	General Ed.	Bio. Sci. research
Elective		

[1] Students have the option of taking Humanities 1A or lower-division writing courses.

[2] Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

[3] Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking upper-division labs.

Undergraduate Major in Genetics

Genetics pervades every aspect of modern society, from newspaper articles to talk shows, from discussions on health care to discussions on cloning. With the sequencing of the human genome, it is more important than ever for biology students to have a broad background in the study of heredity and evolution. The Genetics major is designed to benefit motivated undergraduates who have a particular interest in learning about developmental genetics, evolutionary genetics, and molecular genetics and to allow them to

explore how our knowledge of genetic mechanisms contributes to our understanding of human development and disease. The Genetics major will accommodate students interested in the study of inheritance either as a basic discipline or in terms of its applied aspects in biotechnology, medicine, and agriculture, but will be especially attractive to those students desiring focused study and preparation for graduate training.

Genetics majors begin their study in the junior year with two Genetics courses (Biological Sciences M137 and D137) and a Genomics and Proteomics course (D145). This series of courses is designed to give students an understanding of genetic mechanisms and teach them how to define and answer fundamental questions in biomedical research. Additionally, students choose at least two electives that deal with topics such as the molecular biology of cancer, human genetic diseases, developmental genetics, and the genetics of aging. Finally, Genetics majors are encouraged to explore laboratory research by enrolling in Biological Sciences 199. Laboratory research not only expands a student's technical skills, but is also designed to allow faculty members to mentor Genetics majors. All students majoring in Genetics have a faculty advisor with whom they meet at least quarterly. The faculty advisor helps students plan their curriculum and select appropriate Biological Sciences 199 research projects. Genetics majors also have an opportunity to meet with other Genetics majors on a regular basis and participate in research talks.

The Genetics major provides graduates with advanced training in the skills necessary to pursue graduate degrees in biomedical research. These include Ph.D. graduate programs, teacher-training programs, medical school, and veterinary school. Genetics graduates may also use their backgrounds effectively in planning careers in law, business, education, and public affairs.

REQUIREMENTS FOR THE B.S. DEGREE IN GENETICS

University Requirements: See pages 55–62.

School Requirements: See page 129.

Major Requirements

A. *Required Major Courses:* Biological Sciences D103, D104, D113, D137, D145, and M137.

B. *Upper-Division Laboratories:* three selected from Biological Sciences D111L, E112L, E115L, E166, M114L, M116L, M118L, M121L, M122L, M124L, N113L. Students may petition to substitute Excellence in Research (Biological Sciences 199) for two upper-division laboratories; 199 research is strongly encouraged. The 199 laboratory must be approved by the Department, and Excellence in Research must be successfully completed. Final approval is given by the Department.

C. *Upper-Division Biology Electives:* two selected from Biological Sciences D105, D129, D130, D136, D143, D148, D151, E109, E141, E157, M114, M116, M125, M144, M151, N110, N153, N154.

Application Process to Declare the Major: The major in Genetics is open to junior- and senior-level students only. Applications to declare the major can be made at any time. Information can also be found at http://www.changeofmajor.uci.edu. Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Sample Program — Genetics

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	Humanities 1C
Humanities 1A[1]	Humanities 1B	Bio. Sci. 194S
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2A	Math. 2B	Math. 2D, 2J, or Stats. 8
		Bio. Sci. 100L[3]
Junior		
Bio. Sci. D103	Bio. Sci. D104	U-D Lab or
Physics 3A	Physics 3B, 3LB	Bio. Sci. 199
Bio. Sci. D137	Bio. Sci. M137	Physics 3C, 3LC
General Ed.	Bio. Sci. D113	General Ed.
	General Ed.	
Senior		
U-D Lab or	Bio. Sci. D145	U-D Bio. Sci. elective
Bio. Sci. 199	U-D lab or Bio. Sci. 199	General Ed.
U-D Bio. Sci. elective	General Ed.	General Ed.
General Ed.		

[1] Students have the option of taking Humanities 1A or lower-division writing courses.

[2] Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

[3] Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking upper-division labs.

Undergraduate Major in Microbiology and Immunology

Microbiology and immunology are well-established disciplines within the life sciences. Microbiology addresses the biology of bacteria, viruses, and unicellular eukaryotes such as fungi and protozoa. Studies of microorganisms reveal basic information about processes in evolution, genetics, biochemistry, molecular biology, cell biology, structural biology, and ecology. Many bacteria, viruses, and protozoa cause disease in plants and animals. Hence, major areas of medicine and public health focus on these microorganisms.

Immunology encompasses efforts to understand how multicellular organisms have evolved to survive a variety of challenges to health and survival, including threats by pathogens and cancer cells. Basic questions of how immunity functions are entwined with a fundamental understanding of the consequences of microbial infection. Immunology also refers to the study of autoimmunity, the attack of the host by its own immune system.

The study of viruses (virology) is an important branch of microbiology that has contributed to our understanding of most of the fundamental processes in eukaryotic molecular biology, including the discovery of oncogenes. Viruses provide an excellent tool for the study of disease, cancer, and mechanisms of gene control. With the growing threat of emerging diseases and the potential for viral-based biological weapons, the study of virology was recently intensified and gained new perspectives.

The major has been designed to span the interconnected disciplines of Microbiology and Immunology, and because the scope of the disciplines is considerable, students have the opportunity to specialize within the major in one of three areas: microbiology, immunology, or virology. The curricula overlap considerably, but there are unique courses for each specialty. Students opting for the microbiology specialization can select from courses focused on prokaryotes (bacteria) or eukaryotes (parasites).

The major is designed primarily for students who are serious about pursuing careers in microbiology and immunology and is intended to provide its graduates with the appropriate tools and training to successfully pursue professional and graduate degrees emphasizing these disciplines. These include Ph.D., M.D., and combined M.D./Ph.D. programs. Majoring in Microbiology and Immunology will also provide resources for serious students wishing to use a solid background in these disciplines for career goals in business, law, public and environmental policy, education, and other pursuits.

REQUIREMENTS FOR THE B.S. DEGREE IN MICROBIOLOGY AND IMMUNOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 129.

Major Requirements for the General Track in Microbiology and Immunology

A. *Required Major Courses:* Biological Sciences M121, M122, M124A.

B. *Upper-Division Laboratories*: M116L and one selected from M121L, M122L, or M124L.

C. *Upper-Division Biology Electives*: Six courses selected from the following: Recommended: E124, E176, M119, M120, M124B, M125, M128, M137, M143, M205, or from Alternatives: D103, D137, M114, M116, M144.

Requirements for the Specialization in Immunology

A. *Required Major Courses*: Biological Sciences M121, M122, M124A.

B. *Upper-Division Laboratories*: M116L and M121L.

C. *Upper-Division Biology Electives:* Six courses selected from the following: Recommended: M119, M120, M124B, M125, or from Alternatives: D103, D137, M114, M116, M128, M137, M144.

Requirements for the Specialization in Microbiology

A. *Required Major Courses:* Biological Sciences M121, M122, M124A.

B. *Upper-Division Laboratories:* M116L and M122L.

C. *Upper-Division Biology Electives:* Six courses selected from the following: Recommended: E124, E176, M137, M143, or from Alternatives: D103, D137, M114, M116, M128, M144.

Requirements for the Specialization in Virology

A. *Required Major Courses:* Biological Sciences M121, M122, M124A.

B. *Upper-Division Laboratories:* M116L and M124L.

C. *Upper-Division Biology Electives:* Six courses selected from the following: Recommended: E124, M120, M124B, M125, M205, or from Alternatives: D103, D137, M114, M116, M128, M137, M144.

NOTE: Within the Microbiology and Immunology major, only one specialization can be awarded.

Application Process to Declare the Major: The major in Microbiology and Immunology is open to junior- and senior-level students only. Applications to declare the major can be made at any time, but typically in the spring of the sophomore year. Review of applications submitted at that time and selection to the major by the Microbiology and Immunology Faculty Board is completed during the summer. Information can also be found at http://www.changeofmajor.uci.edu. Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Honors Program

The Microbiology and Immunology Honors Program is available to high-achieving majors. The honors designation can be achieved by exceptional performance in research (Excellence in Research) and exceptional scholarship in the required and elective courses (3.5 GPA), and is noted on the transcript. The specific details of this achievement are to be submitted and approved by the major coordinator and the faculty oversight committee. The honors selection process occurs after winter quarter each year. Microbiology and Immunology students must enroll in Biological Sciences H195 to complete the requirements for the Excellence in Research Honors program.

Sample Program — Microbiology and Immunology

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	General Ed.
General Ed.	General Ed.	General Ed.
General Ed.	General Ed.	
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[1]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2A	General Ed.	General Ed.
Bio. Sci. 100L[2]	Math. 2B	Math. 2D, 2J, or Stats. 8
Bio. Sci. 194S		
Junior		
Physics 3A	Physics 3B, 3LB	Physics 3C, 3LC
Bio. Sci. M124A	Bio. Sci. M121	Bio. Sci. M122
Bio. Sci. M116L	GE or U-D Lab	GE or U-D Lab
Bio. Sci. 199	Bio. Sci. 199	Bio. Sci. 199
Senior		
U-D Biology Elective	U-D Biology Elective	U-D Biology Elective
U-D Biology Elective	U-D Biology Elective	U-D Biology Elective
Bio. Sci. 199	Bio. Sci. 199	Bio. Sci. 199

[1] Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

[2] Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking upper-division labs.

Undergraduate Major in Neurobiology

The Neurobiology major is designed to teach students how neurobiologists apply cellular, molecular, systems, and behavioral analyses in understanding how the nervous system works. The hallmark of the major is a year-long, in-depth exploration of the intellectual tools used to create, advance, and disseminate knowledge about the nervous system. Through neurobiology satellite courses, students acquire advanced factual knowledge about neurobiology. In addition, Neurobiology majors may choose to participate in research through Biological Sciences 199, where they will learn technical skills and receive mentoring from faculty members.

Students completing the Neurobiology major will be well qualified for admission to graduate or professional schools in preparation for careers in biological research, medicine, dentistry, veterinary medicine, nursing, and other related fields. Even without additional education, they will be competitive for positions in the pharmaceutical industry, the health care delivery industry, or in medically or biologically related technologies. The major also provides valuable preparation for students interested in entering other disciplines that increasingly interface with biology and biotechnology, such as law, business administration, and government policy. Additionally, the major provides excellent preparation for students who wish to become high school science teachers.

REQUIREMENTS FOR THE B.S. DEGREE IN NEUROBIOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 129.

Major Requirements

A. *Upper-Division Core:* Biological Sciences N110 and two selected from D103, D104, E106, E109.

B. *Required Major Courses:* Biological Sciences N112A-B-C.

C. *Upper-Division Laboratories:* Biological Sciences N113L and two selected from D111L, E112L, E115L, E166, M114L, M116L, M118L, M122L; one of these two laboratories can be satisfied by completion of Excellence in Research in the Biological Sciences.

D. *Upper-Division Biology Electives:* two selected from Biological Sciences N119–N190; one additional four-unit course selected from Biological Sciences D103–D190, E106–E190, M114–M190, N110–N190, or from Chemistry 130A-B-C, Chemistry 131A-B-C, and Physics 147A. No course may be used to satisfy more than one requirement.

Application Process to Declare the Major: The major in Neurobiology is open to junior- and senior-level students only. Applications to declare the major can be made at any time, but typically in the spring of the sophomore year. Review of applications submitted at that time and selection to the major by the Neurobiology Faculty Board is completed during the summer. Information can also be found at http://www.changeofmajor.uci.edu. Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Sample Program — Neurobiology

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	Humanities 1C
Humanities 1A[1]	Humanities 1B	Math. 2A
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2B	Stats. 7 or 8 or	Bio. Sci. 110
Bio. Sci. 194S	Math. 2D or 2J or 7	General Ed./Elective
Junior		
Bio. Sci. N112A	Bio. Sci. N112B	Bio. Sci. N112C
Required Major Course	Bio. Sci. N113L	Required Major Course
Bio. Sci. 100L[3]	Research/Elective	Physics 3C, 3LC
Physics 3A	Physics 3B, 3LB	
Senior		
Bio. Sci. Elective	Bio. Sci. Lab	Bio. Sci. Lab
Bio. Sci. Elective	Bio. Sci. Elective	Research/Elective
Research/Elective	General Ed./Elective	General Ed./Elective

[1] Students have the option of taking Humanities 1A or lower-division writing courses.

[2] Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

[3] Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking upper-division labs.

Undergraduate Major in Plant Biology

Recent developments in plant biology and biotechnology place plants in the center of biological research. A dramatic increase in the understanding of cellular and developmental processes in plants enables plant biologists to control and manipulate plants developmentally as well as genetically. The availability of unique regeneration and gene delivery systems puts plant genetic engineering to the forefront of biotechnology. Food derived from genetically engineered plants is a daily experience for the American public and a continuous topic of ethical, environmental, sociological, and political discussions.

The Plant Biology program builds on core knowledge in plant structure taught in courses required for all majors offered by the School of Biological Sciences. After completing their second year, students may be admitted to the Plant Biology major and take courses primarily focusing on cellular, developmental, and molecular aspects of plant biology in lecture and laboratory classes. Although not affiliated with agricultural sciences, a limited exposure to applied aspects, such as plant breeding and hands-on horticulture is offered through the program. The Plant Biology major is fully compatible with the major in Biological Sciences and with medical school admission requirements.

The Plant Biology major is intended to provide graduates with the knowledge and skills necessary to pursue graduate degrees in biological research, including Ph.D. and M.S. training. In addition, graduates should be excellent candidates for pharmacy schools. Furthermore, the unit requirement for the major gives enough flexibility for students to tailor the curriculum to effectively support careers in business and education. The impact of biotechnology on society and the resulting need for informed specialists make this area of study effective training for students interested in law, journalism, or public affairs.

REQUIREMENTS FOR THE B.S. DEGREE IN PLANT BIOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 129.

Major Requirements

A. *Required Major Courses:* Biological Sciences D103, D105, D129, and E127.

B. *Upper-Division Laboratories:* Biological Sciences D111L and two selected from Biological Sciences E112L, E115L, E166, M114L, M116L, M118L, M121L, M122L, M124L, N113L. Students may petition to substitute Excellence in Research (Biological Sciences 199) for one upper-division laboratory other than D111L; 199 research is strongly encouraged. The 199 laboratory must be approved by the Department, and Excellence in Research must be successfully completed. Final approval is given by the Department.

C. *Biology Electives:* one from Biological Sciences D104, E106, E109; and two from Biological Sciences 9E, 11B, D137, D151, E118, E137, E167, E172, E175, E185, E189, M116, M122, M128, M137, M144.

Application Process to Declare the Major: The major in Plant Biology is open to junior- and senior-level students only. Applications to declare the major can be made at any time, but typically in the spring of the sophomore year. Information can also be found at http://www.changeofmajor.uci.edu. Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, or Pharmaceutical Sciences are not permitted.

Sample Program — Plant Biology		
FALL	**WINTER**	**SPRING**
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	Humanities 1C
Humanities 1A[1]	Humanities 1B	Bio. Sci. 194S
Bio. Sci. 2A		
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA[2]	Chemistry 51B, 51LB	Chemistry 51C
Math. 2A	Math. 2B	Math. 2D, 2J, or Stats. 8
Bio. Sci. 100L[3]		Bio. Sci. E106
Junior		
Bio. Sci. D105	Bio. Sci. D103	U-D Lab or
Physics 3A	Physics 3B, 3LB	Bio. Sci. 199
Bio. Sci. E127	Bio. Sci. D111L	Physics 3C, 3LC
General Ed.	General Ed.	Bio. Sci. D129
		General Ed.
Senior		
U-D Lab	Bio. Sci. Elective	Bio. Sci. Elective
General Ed.	General Ed.	General Ed.
Research	Research	Research

[1] Students have the option of taking Humanities 1A or lower-division writing courses.

[2] Chemistry 52A-B-C, 52LA-LB may be taken instead of 51A-B-C, 51LA-LB.

[3] Prerequisites are completion of or concurrent enrollment in Biological Sciences 97 and 194S, and satisfactory completion of the lower-division writing requirement; 100L must be completed prior to taking upper-division labs.

Special Programs and Courses

Biological Sciences 199

The Biological Sciences 199 Undergraduate Research Training Program provides students the opportunity to pursue independent research. Students conduct experimental laboratory, field, or clinical research as an apprentice scientist under the supervision of a professor in the School of Biological Sciences or the School of Medicine. Biological Sciences 199 research students experience the challenge and excitement of the world of science. Students develop new scientific skills and knowledge while training with professors who are on the cutting edge of research and discovery in the biological and medical sciences. The research training may commence as early as the sophomore year or, in the case of exceptional students, in the freshman year.

To participate in this unique research training program, students must be in good academic standing, and completion of the Biological Sciences 194S Safety and Ethics course is mandatory prior to enrollment. Students are encouraged to investigate the possibilities for research early to assure that all requirements and deadlines are met. It is recommended that students contact a faculty sponsor at least one quarter in advance for Biological Sciences 199 enrollment. Once a faculty sponsor is acquired, the student must submit the enrollment packet to the Biological Sciences Student Affairs Office, 1011 Biological Sciences III. At the end of each quarter a Summary Report is required.

Students cannot participate in research involving human blood, body fluids, or tissue, unless special approval is granted. The faculty sponsor must submit a request for exception to the Biological Sciences Student Affairs Office.

Students conducting research directly with patients or other human subjects must comply with special enrollment procedures and the additional safety training required at the clinical site. The Biological Sciences 199 Undergraduate Research Training Program standards, procedures, enrollment packets, and announcements are available at http://students.bio.edu/bio199.html.

The Biological Sciences 199 Undergraduate Research Training Program can provide experience that is beneficial for the future pursuit of graduate school. Information regarding research careers in the biological sciences is best obtained from a faculty research mentor.

Students should be aware that for any one quarter, a maximum of five units of independent study courses, taken in any school or program, is permitted.

Minority Sciences Programs in Biological Sciences

The Minority Sciences Programs (MSP) in Biological Sciences is a UCI umbrella program that provides infrastructure and orchestration for the operation of minority research training grants supported by the National Institutes of Health (NIH) and other agencies. MSP seeks to increase the number of U.S. underrepresented groups in biomedical research careers. MSP participants benefit from early exposure, continuous research training, and faculty mentoring. Support is also provided through paid summer and year-round research internships, access to the latest computer technology, tutoring, academic advising, scientific writing, and participation at national conferences. Furthermore, MSP has established a campuswide, regional, national, and international network of committed faculty and resource programs to facilitate the transition from high school through community college, baccalaureate, and master's degrees to Ph.D. careers in biomedical research and related fields. Additional information is available from the MSP office, 1104 Biological Sciences III; (949) 824-6463; http://port.bio.uci.edu.

Biological Sciences Tutoring Program

The Tutoring Program provides free tutoring for most Biological Sciences courses and is available to all students in any major. Weekly small group tutoring sessions, reviews for midterms and finals, and a growing online database of worksheets and review materials are provided. In the Tutoring Program, UCI students tutor other UCI students. For the student tutor, this program provides opportunities to develop their teaching abilities, to meet and interact with faculty, and to perform a worthwhile and necessary service. Tutors also receive academic credit. For more information, contact the Biological Sciences Student Affairs Office in 1011 Biological Sciences III or visit the tutoring program Web site at http://www.eee.uci.edu/programs/biotutor.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Specifically, Biology majors should consider the EAP programs in the United Kingdom, Canada, Sweden, Australia, Denmark, and Costa Rica. See the Center for International Education section for additional information.

Students may wish to participate in the Education Abroad Program's Tropical Biology Quarter which is for undergraduates with at least one year of introductory biology, one quarter of upper-division biology, and a serious interest in biological studies. The program includes lectures, field laboratories, and independent research, with an emphasis on direct field experience. Students also take a course in Spanish language and Latin American culture.

Master of Science with a Concentration in Biotechnology

The School of Biological Sciences offers a master's program with a concentration in Biotechnology designed to train students to enter the field of biotechnology as skilled laboratory practitioners. The upper-division course requirements for admission into the program are extensive. Students interested in applying for admission

to the Biotechnology program should plan to complete the necessary courses during their junior and senior years. See the Graduate Study in Biological Sciences section for more information.

Special Research Resources

Special research resources include the Beckman Laser Institute and Medical Clinic, a research, training, and service facility in the area of laser microbeam technology; the School of Biological Sciences Biohazard (P-3) Facility, which provides laboratory facilities for working with biological agents or biological molecules such as recombinant DNA which would be hazardous when used in open laboratories; the Developmental Biology Center, devoted to analyzing the cellular and genetic mechanisms underlying growth, development, and regeneration; the Center for the Neurobiology of Learning and Memory, a research center for studies of the brain mechanisms underlying learning and memory; the Institute for Memory Impairments and Neurological Disorders; the Center for Virus Research, which includes the Viral Vector Design research group; the Conservation Biology Project; the Cancer Research Institute; the Center for Immunology; the Macromolecular Structure Research Unit; the UCI Arboretum, a botanical garden facility; the San Joaquin Marsh Reserve, which supports controlled marsh biota; the Burns Piñon Ridge Reserve, a high-desert habitat in San Bernardino County; and the UCI Ecological Preserve, which includes coastal hills on the campus, once under heavy grazing, but now returning to a more natural state. It is important to note that the School of Biological Sciences collaborates with the School of Medicine, thereby providing an opportunity for the sharing of both teaching and research activities. These collaborative efforts include the Institute for Genomics and Bioinformatics; the Reeve-Irvine Research Center; and the Bio-Imaging Interest Group.

Advising: Academic, Career, Health Sciences

1011 Biological Sciences III
http://www.bio.uci.edu/students/

Academic Advising

The Biological Sciences Student Affairs Office coordinates the advising program and provides academic counseling as well as special services particularly in the area of preprofessional career counseling. Undergraduate Biological Sciences students should consult the Biological Sciences Student Affairs Office for information on academic requirements for the degree, career opportunities, the Biological Sciences 199 Research Program, available tutoring for Biological Sciences courses, Biological Sciences student organizations, and scholarship information. Students can also come to the Biological Sciences Student Affairs Office to change their major, apply for graduation, or for any other help they might need related to their academic career at UCI.

All freshmen will enroll in small-group freshman seminars (Biological Sciences 2A) and all other new students will enroll in special sections of Biological Sciences 190.

Peer Academic Advisors. The Peer Academic Advisors are upper-division Biological Sciences majors who bring with them valuable academic and social experiences. Their functions include counseling students in matters of major selection, program planning, petitioning, tutoring, learning skills problems, and participation in cocurricular and extracurricular activities.

The Peer Advisors are located in the Biological Sciences Student Affairs Office. Office hours are posted at the beginning of each quarter.

Career Advising

Information on graduate and professional schools in the health sciences can be obtained from the Biological Sciences Student Affairs Office. The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Areas of opportunity open to those with a Bachelor of Science degree include laboratory technology, publishing, technical editing, pharmaceutical sales, and training programs in county, state, and federal agencies. The bachelor's degree is necessary to pursue studies leading to the M.S. and Ph.D. degrees.

The B.S. degree, plus short training periods, may prepare students for employment in education, medical technology (usually one year), allied health positions, and various other areas.

Education (community colleges, state colleges, or private schools), medical illustration, and public health (which includes hospital administration, biostatistics, epidemiology, environmental health sciences, social work, public health education, maternal and child health, and infectious and tropical diseases) are fields in which opportunities are available upon completion of a master's program.

The Ph.D. degree may lead to research in many areas, among them biochemistry, biometeorology, botany, cytology, ecology, fishery biology, genetics, home economics, microbiology, molecular biology, pathology, physiology, psychobiology, public health, range management, soil conservation, and zoology.

Other areas where advanced degrees are necessary include medicine, dentistry, law, optometry, podiatry, osteopathy, physical therapy, and veterinary medicine.

Health Sciences Advising

Advising for careers in the health sciences is a specialty of the Biological Sciences Student Affairs Office. Students desiring to enter the health sciences should have their programs checked in the Office and should plan to enroll in Biological Sciences 3A. Admissions tests for medical, dental, pharmacy, and graduate schools should be taken in the spring, a year and one-half before the student plans to enter.

Leaders in nearly all health professional schools recommend that students preparing to seek admission to their schools plan to obtain a bachelor's degree. Students who plan to enter a school of dentistry, medicine, or other areas of the health sciences may receive the required preprofessional training at UCI. This preprofessional training may be accomplished by (1) completing the major in Biological Sciences or (2) majoring in any school or department *and* fulfilling concurrently the specific course requirements of the dental, medical, or other professional school the student expects to attend.

Students interested in the health sciences should choose electives in the social sciences, possibly a foreign language, physical chemistry, or other specific courses required or recommended by graduate schools.

The Biological Sciences Student Affairs Office offers specialized services, for a fee, to all students applying to postgraduate professional schools in the health sciences, including a personal file containing the student's letters of recommendation, and a service of sending all recommendations for a student to professional and graduate schools.

Student Participation

A wide variety of student associations, clubs, and groups provide opportunities for School of Biological Sciences students to participate in different types of activities and events. The groups are wide

ranging and include nationally recognized honors societies such as Alpha Epsilon Delta, volunteer service organizations such as the Flying Sams, specialized groups such as the UCI Sports Medicine Club, and more. Detailed information about the numerous options is available online at http://www.bio.uci.edu/students/Current/content_organizations.html.

Undergraduate Courses in Biological Sciences

***(Schedule of Classes* designation: Bio Sci)**

1A Life Sciences (4) F, W, S. Lecture, three hours. Designed to introduce nonmajors to the basic concepts of modern biology. Discussion of evolutionary biology, ecology, molecular biology, and genetics. Open to nonmajors only. **(II)**

2A Freshman Seminars (1). Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/opportunities. Pass/Not Pass only. Open to freshman Biological Sciences majors only.

3A Career Decision Making (0). Lecture, one hour. An introductory course designed to facilitate the career decision-making process. Decision-making processes, values, and standardized tests of aptitudes, interests, and values are utilized with non-test data in appraising biological sciences career options. Pass/Not Pass only. One unit of workload credit only.

5 Introduction to Molecular Biology (4). Lecture, three hours. Molecules of life, with emphasis on medical applications. Open to nonmajors only. No credit given for Biological Sciences 5 if taken after Biological Sciences 99. **(II)**

6 Tropical Biology: Race to Save the Tropics (4). Lecture, three hours. Population growth combines with tropical resource consumption by industrialized nations to cause high rates of deforestation, pollution, habitat fragmentation, and extinction of species. Discusses tropical biomes, their population, community, and ecosystem processes, and possible means of conservation of biodiversity. **(II)**

9A Nutrition Science (4) F, W. Lecture, three hours. An introduction to nutrition science, integrating concepts from biology, biochemistry, microbiology, physiology, and psychology to explain the interaction between nutrients and the human body. Biological basis of nutrient standards is analyzed. Effects of nutrition, behavior, exercises on health/disease. **(II)**

9B Biology and Chemistry of Food and Cooking (4) S. Lecture, three hours. The kitchen is used as a laboratory to introduce fundamental principles of biology, chemistry, and physics. A molecular/cellular analysis of cooking, including concepts such as protein structure, browning reactions, colloids, emulsions, carbohydrate metabolism, and development of flavor/texture through biochemical transformations. **(II)**

9C Biotech Basics (4). Lecture, three hours. An overview of current biotechnology. Discusses the biological/molecular basis of novel therapies for diseases, modification of human genes, human genome project, cloning, DNA fingerprinting, and genetically modified food. Targeted for students interested in modern breakthroughs in biology. **(II)**

9D Diseases of the Twenty-First Century (4) F. Lecture, three hours. Why do we get sick? An introduction to the biological basis of human disease, including diseases of the cardiovascular, respiratory, nervous, and reproductive systems. Case studies present diagnosis, treatment, and prevention protocols. Inheritable and infectious diseases also discussed. Only one course from Biological Sciences 9D, 10, and 12D may be taken for credit. **(II)**

9E Horticulture Science (4). Lecture, two hours; laboratory, two hours; field work, one weekend day per quarter. Scientific principles of horticulture at the UCI Arboretum. Taxonomy, plant life history strategies; experiments with seed dormancy; morphological adaptations for specialized sexual and clonal reproduction; basics of plant propagation and ecological restoration. Laboratory fee. **(II)**

9G Way Your Body Works (4). Lecture, three hours. An introduction to the basic mechanisms that control the organ systems of the human body, including the nervous, cardiovascular, immune, and reproductive systems. Emphasis is on how the body works normally, but includes how these processes fail in disease. Open to nonmajors only. **(II)**

9J Biology of Oriental Medicine (4) W. Lecture, three hours. With lectures, demonstrations, and hands-on learning, the theory and practice of herbal medicine, acupuncture, qigong, and manipulative therapies are explained in Western biomedical terms. The latest basic and clinical research advances in each area are also described. Only one course from Biological Sciences 9J, 9N, and D124 may be taken for credit. **(II)**

9K Global-Change Biology (4) W. Lecture, three hours; discussion, one hour. Addresses ways in which humans are altering the global environment, with consequences for the ecology of animals, plants, and microbes. Discussion on how these biologically oriented questions relate to human society, politics, and the economy. Same as Earth System Science 13. **(II)**

9N Introduction to Complementary and Alternative Medicine (4) Summer. Lecture, three hours. Basic and clinical research on complementary and alternative therapies (e.g., herbal medicine, mind-body practices, energy medicine, acupuncture, homeopathy, chiropractic, Ayurveda), and how such practices are integrated into Western medicine are discussed. Includes lectures, demonstrations, and hands-on learning. Open to nonmajors only. Biological Sciences 9N and 10 may not both be taken for credit. Only one course from Biological Sciences 9N, 9J, and D124 may be taken for credit. **(II)**

10 The Biology of Human Diseases (4). Lecture, three hours. Introduction to concepts of diagnosis, treatment, and prevention of major human infectious diseases. Covers some aspects of epidemiology. Scope and impact of infectious diseases in the present and past experiences in controlling infectious disease. Reviews the biology of human organ systems. Only one course from Biological Sciences 9D, 10, and 12D may be taken for credit. **(II)**

11 Topics in Biological Sciences (4) F, W, S. Lecture, three hours. Studies in selected areas of biological sciences. May be taken for credit three times as topics vary. **(II)**

12B Disease and Civilization (4). Lecture, three hours. To demonstrate the role played by infectious diseases on the development of human civilization. The psychological impact of major epidemic diseases upon society and culture. Starting with early hunting and gathering cultures through the effect of AIDS in the modern world. **(II)**

12D Molecular Basis of Human Disease (4). Lecture, four hours. Introduction to the concepts of the molecular basis, treatment, and diagnosis of human disease. Diseases resulting from infectious agents such as virus, bacteria, protozoan and metazoan animals, and diseases resulting from genetic disorders discussed in context of molecular mechanisms. Only one course from Biological Sciences 9D, 10, and 12D may be taken for credit. **(II)**

12E Plants, Civilization, and Technology (4). Lecture, three hours. How plants affected the formation of civilization and the course of history, from early agriculture to today's plant genetic engineering. Discusses and merges biological, historical, and cultural aspects. May include field trips, musical and art presentations, a Japanese tea ceremony.

14 California Teach 1: Introduction to Science and Mathematics Teaching (3) F, W, S. Seminar, three hours. First in a series for students interested in becoming middle or high school teachers of mathematics or science. Students gain an understanding of effective, research-based teaching strategies. Includes supervised field experience in a K–12 classroom. Same as Physical Sciences 5. **(IX)**

16 Introduction to Darwinian Biology (4) W. Lecture, three hours. An introduction to the basic concepts of ecology, evolution, and functional biology suitable for non-scientists. Open to nonmajors only. **(II)**

20 California Natural History (4) F. Lecture, three hours. Introduction to ecological relationships within a variety of California habitats. Explores aspects of the physical environments and the adaptations of organisms to their physical and biological surroundings in habitats such as the coastal zone, mountains, and deserts. **(II)**

25 Biology of Cancer (4) W. Lecture, four hours. Biological, clinical, and psychosocial nature of cancer through the perspectives of medical researchers, biologists, physicians, and health educators. For students of all majors, designed so that each can increase personal awareness of the biology of cancer. No credit for Biological Sciences 25 if taken after Biological Sciences M125. **(II)**

30 Biomedical Ethics (4) S. Lecture, three hours. Ethical issues inherent in twenty-first-century biological and medical advances. An introduction to the basic biology underlying these issues and an analysis of the ethical implications to society. Topics such as cloning, stem cell research, genetic engineering are discussed by guest speakers.

35 The Brain and Behavior (4). Lecture, three hours. Introduction to how the brain works. Biological processes underlying perception, movement, sleep-wake cycles, motivation, language, learning, and memory. Changes in the brain associated with sex differences, drug use, aging, seasons, and time of day. Fundamental properties of the nervous system. Open to nonmajors only. **(II)**

36 Drugs and the Brain (4). Lecture, three hours. Introduction to the actions of drugs on the brain. How studying drug action helps to reveal normal functions of neurons. How drugs can correct neural disorders or disrupt neural function. Biological issues related to drug abuse, drug addiction, and drug seeking. Open to nonmajors only. **(II)**

37 Brain Dysfunction and Repair (4). Lecture, three hours. Introduction to the disruptions in brain function that underlie disorders such as Alzheimer's disease, Parkinsonism, schizophrenia, and depression, and the basis for drug therapies. The brain's ability to repair itself after damage and the pros and cons of that repair. Open to nonmajors only. **(II)**

38 Mind, Memory, Amnesia, and the Brain (4) S. Lecture, three hours. Introduction to neural mechanisms underlying learning and memory. Emphasis on molecular changes that mediate memory as well as structures involved in different forms of memory. Additionally, the biology of memory phenomena, from extraordinary memory to false memory to amnesia is examined. Open to nonmajors only. **(II)**

39 Neurobiology of Sex Differences (4) W. Lecture, three hours. Analysis of the difference between the two sexes. Analyzing the sex chromosomes provides a look at the general biological development of the sexes. Also focuses on how the nervous system becomes sexually differentiated and how the nervous system ultimately mediates different behaviors. Open to nonmajors only. **(II)**

45 AIDS Fundamentals (4) F, W. Lecture, three hours; discussion, one hour. Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, risk reduction, and how the community can respond. Same as Public Health 80. **(II)**

46 Discussion and Literature Research in AIDS (2 to 4) F, W. Discussion, two hours; research, two hours. Students carry out two activities: (1) leading discussions about HIV/AIDS (predominantly regarding sociological and personal reactions) among students taking the AIDS Fundamentals course and (2) literature research about biomedical aspects of AIDS. Prerequisite: Biological Sciences 45 or Planning, Policy, and Design 45 or Public Health 80; consent of instructor.

55 Introduction to Ecology (4). Lecture, three hours. Principles of ecology; application to populations, communities, ecosystems, and humans. Open to nonmajors only. No credit given for Biological Sciences 55 if taken after Biological Sciences 96 or E106. **(II)**

65 Biodiversity and Conservation (4) W. Lecture, three hours. A biological perspective on the current environmental crisis. The origin, evolution, and value of biological diversity. Extinction and depletion caused by overexploitation, habitat loss, and pollution. Conservation through habitat preservation and restoration, captive breeding, cryopreservation. **(II)**

75 Human Development: Conception to Birth (4) W, S. Lecture, three hours. Processes leading to the birth of a healthy child and the avoidance of birth defects. Male and female reproductive systems, hormonal control of egg-sperm formations, sexual intercourse, contraception, venereal diseases, fertilization, cell division, embryonic development, fetal physiology. Open to nonmajors only. **(II)**

H90 The Idiom and Practice of Science (4). The importance of biological sciences in our world are discussed. Topics may include brain and behavior, health and disease, genetics and society, and conservation biology. A primary goal is to encourage students to understand better the world in which they live. Prerequisite: restricted to members of the Campuswide Honors Program. **(II)**

92 Special Group Activities

Sec. 3 Reading, Writing, and Reasoning for Health Science (4) F, W, S. Designed to strengthen biology students' reading, writing, and critical thinking skills to ensure their success at the University and to prepare them for graduate study in medicine, dentistry, optometry, or public health. Pass/Not Pass only. Open to Biological Sciences majors only.

Sec. 5 Curriculum (2). Initiation, planning, and coordination of student-run courses. Prerequisite: consent of instructor. May be repeated for a total of eight units. Pass/Not Pass only.

101 California Teach 2: Middle School Science and Mathematics Teaching (3) F, W. Seminar, three hours. Second in a series for students interested in becoming middle or high school teachers of mathematics or science. Students gain an understanding of effective, research-based teaching strategies for grades 6–8. Includes supervised field experience in a middle school classroom. Prerequisite: Biological Sciences 14. Same as Physical Sciences 105. **(IX)**

102 California Teach 3: High School Science and Mathematics Teaching (2) F, W. Seminar, 1.5 hours; field work, 1.5 hours. Capstone of a series of three seminars for students interested in becoming secondary mathematics or science teachers. Meets six times for students to understand effective, research-based teaching strategies. Includes an opportunity to experience teaching in a high school. Prerequisites: Biological Sciences 14 and 101. Same as Physical Sciences 106.

108 Research Methods (4) W, S. Lecture, three hours; laboratory, two hours. Explores tools of inquiry for developing and implementing science research projects. Students undertake independent projects requiring data collection, analysis, and modeling, and the organization and presentation of results. Additional topics include ethical issues and role of scientific literature. Prerequisite: Biological Sciences 14 or Physical Sciences 5. Same as Chemistry 193 and Physics 193.

190 Transfer Student Seminars (1). Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/opportunities. Pass/Not Pass only. Open to new transfer students only.

CORE CURRICULUM

Prerequisites listed for Core courses are rigorously enforced. (Transfer students who have successfully completed one or more years of college biology should consult with the Biological Sciences Student Affairs Office for possible exemption from portions of the Core.)

93 From DNA to Organisms (4) F. Lecture, three hours; discussion, one hour. Cell biology, biochemistry, genetics, and the biology of organ systems. Covers concepts of building blocks (nucleotides, amino acids, and cells) and of information flow (DNA to proteins, receptors to nuclei, the blood to distant organs, and DNA to offspring). No credit given for Biological Sciences 93 if taken after Biological Sciences 97 and/or 98. **(II)**

94 From Organisms to Ecosystems (4) W. Lecture, three hours; discussion, one hour. Patterns of diversity, ecology, and evolutionary biology. Emphasis is on the Tree of Life and how its members are distributed and interact. Prerequisite: Biological Sciences 93. No credit given for Biological Sciences 1A if taken after Biological Sciences 94. **(II)**

97 Genetics (4) F. Lecture, three hours; discussion, one hour. Introduction to genetics. Basic features of the replication and expression of DNA; cell division; and gene transmission. Recombination and mutation in diploid organisms. Prerequisite: Biological Sciences 94.

98 Biochemistry (4) W. Lecture, three hours. Structure and properties of proteins; major biochemical pathways and mechanisms for their control. Prerequisites: completion of Biological Sciences 97 and completion of or concurrent enrollment in Chemistry 51B or 52B.

99 Molecular Biology (4) S. Lecture, three hours. Biochemistry and replication of nucleic acids; molecular genetics; protein biosynthesis; genetic code; regulation of expression of genetic information; biochemical evolution. Prerequisite: Biological Sciences 98.

100L Experimental Biology Laboratory (4) F, S. Lecture, one hour; laboratory, three hours. Basic experimental design, laboratory techniques, data gathering skills, and analysis and preservation of data for a variety of areas of inquiry in the biological sciences. Prerequisites: current enrollment in or completion of Biological Sciences 97 and 194S; satisfactory completion of the lower-division writing requirement.

D103 Cell Biology (4) F, W. Lecture, three hours; discussion, one hour. Analysis of the basic structure and function of animal cells, with an emphasis on the regulation of cellular processes. The basic features of membranes, cellular compartmentalization, protein trafficking, vesicular transport, cytoskeleton, adhesion, signal transduction, and cell cycle are covered. Prerequisite: Biological Sciences 99. Biological Sciences D103 and 107 may not both be taken for credit.

D104 Developmental Biology (4) W. Lecture, three hours; discussion, one hour. Cellular and molecular analysis of how a fertilized egg develops into an organism consisting of complex structures such as the eye, arms, and brain. Emphasis is on the key concepts of developmental processes underlying pattern formation, growth, and regeneration. Corequisite or prerequisite: Biological Sciences D103. Biological Sciences D104 and 108 may not both be taken for credit.

D105 Cell, Developmental, and Molecular Biology of Plants (4) F. Lecture, three hours. Emphasizes the special features of plant cells and plant development as compared to animals. Plants' ability to fuel our planet through photosynthesis and the interactions of plants with microorganisms in making nitrogen available to other life forms are two central topics. Prerequisite: Biological Sciences 99.

E106 Processes in Ecology and Evolution (4) S. Lecture, three hours; discussion, one hour. An in-depth study of the mechanisms that drive evolution and ecology including: natural selection, mutation, genetic drift, speciation, extinction, life history patterns, population dynamics, ecosystem and community structure, predator-prey and host pathogen interactions, and social behavior. Prerequisite: Biological Sciences 94. May be used as a course repeat of Biological Sciences 96. Biological Sciences E106 and 96 may not both be taken for credit.

E109 Human Physiology (4) F, W. Lecture, three hours. Functional features of the major organ systems in the human body. Emphasis on homeostasis and the interactions of organ systems in health and disease. (Discussion of behavior and brain function deferred to Biological Sciences N110.) Prerequisite: Biological Sciences 99.

N110 Neurobiology and Behavior (4) S. Lecture, three hours. Consideration of the evolution of behavior, including ethological and psychological aspects and analysis of neuroanatomical, neurochemical, neurophysiological, and neuroendocrine systems underlying basic behavioral processes. Corequisite or prerequisite: Biological Sciences 99.

UPPER-DIVISION LABORATORIES

D111L Developmental and Cell Biology Laboratory (4) F, W, S. Lecture, two hours; laboratory, three hours. Students study the division of cells, isolate cellular organelles (chloroplasts, mitochondria, nuclei), and follow changes in cells undergoing programmed cell death. Development is demonstrated in experiments showing cooperation of individual cells in forming a multicellular organism. Prerequisites: Biological Sciences 100L and 194S; concurrent enrollment in or completion of Biological Sciences D103 or D104 or D105.

E112L Physiology Laboratory (3) F, W, S. Laboratory, four hours. Prerequisites: Biological Sciences 100L and 194S; and E109 or Engineering BME120 and BME121.

E115L Evolution Laboratory (4) S. Laboratory, seven hours. Students perform experiments which illustrate important concepts in evolutionary biology such as natural selection, random genetic drift, inbreeding, age-specific selection, sexual selection, and phylogenetic reconstruction. Prerequisites: Biological Sciences 100L, E106, and 194S.

E166 Field Methods in Ecology (6) F. Laboratory, eight hours. Field studies of major concepts in plant and animal ecology, with emphasis on experimental design, field sampling methods, statistical analysis, and scientific writing. An independent project and two field trips are required. Satisfies the upper-division writing requirement with a grade of C or better. Prerequisites: Biological Sciences 100L, E106, and 194S, and satisfactory completion of the lower-division writing requirement.

M114L Biochemistry Laboratory (4) F, W, S. Laboratory, four hours. Properties of enzymes and the culture and isolation of mutants of microorganisms. Prerequisites: Biological Sciences 99, 100L, and 194S.

M116L Molecular Biology Laboratory (4) F, W, S, Summer. Laboratory, four hours. Students perform experiments which illustrate the chemical and biological properties of nucleic acids. Emphasis is placed on recent techniques in recombinant DNA technology including gene isolation and characterization. Prerequisites: Biological Sciences 99, 100L, and 194S.

M118L Experimental Microbiology Laboratory (4) F, W, S, Summer. Laboratory, three hours; discussion, one hour. Introductory general microbiology designed for preprofessional biology majors. Includes microscopy, cultivation of bacteria, morphological and biochemical characterization of bacteria, microbial metabolism, growth and genetics, microorganisms and human disease, and interactions of microorganisms with the environment. Prerequisites: Biological Sciences 100L and 194S; concurrent enrollment in or completion of Biological Sciences M122 or M132, or equivalent. M118L and M122L may not both be taken for credit.

M121L Advanced Immunology Laboratory (4) S. Laboratory, four hours. Emphasis is placed on learning modern techniques in immunology such as ELISAs, western blotting, immunofluorescent staining assays. Prerequisites: Biological Sciences M116L and M121; consent of instructor. Concurrent with Molecular Biology and Biochemistry 221L.

M122L General Microbiology Laboratory (6) F, Summer. Laboratory, six hours. Selective isolation of wide variety of microbial types. Characterization and identification by morphological and comparative nutritional and biochemical approaches. Industrial, medical, and biological research applications. Prerequisites: Biological Sciences 100L and 194S; concurrent enrollment in or completion of Biological Sciences M122 or M132, or equivalent. M122L and M118L may not both be taken for credit.

M124L Virus Engineering Laboratory (4) S. Laboratory, four hours; discussion, one hour. An advanced laboratory for undergraduates who have completed a virology lecture class. Students learn to engineer recombinant viruses and express genes in mouse tissue. Prerequisites: Biological Sciences M116L and M124A or M124B; consent of instructor.

N113L Neurobiology Laboratory (3) W, S. Laboratory, four hours. Prerequisites: Biological Sciences 100L and 194S; concurrent enrollment in or completion of Biological Sciences N110.

UPPER-DIVISION ELECTIVES

DEVELOPMENTAL AND CELL BIOLOGY

D113 Genetics Majors Seminar (1) W. Seminar, one hour. Genetics majors attend a weekly seminar to discuss current research techniques and career opportunities in the field. Students have the opportunity to present their own independent research. Open to Genetics majors only. May be taken for credit two times.

D114 Developmental and Cell Biology Majors Seminar (1) S. Seminar, one hour. Developmental and Cell Biology majors attend a weekly seminar to discuss current research techniques and career opportunities in the field. Students have the opportunity to present their own independent research. Pass/Not Pass only. May be taken for credit two times.

D116 Human Reproduction and Development PBL Course (4) Summer. Lecture, six hours. Focuses on human reproductive biology and *in utero* human development. Taught in a problem-based learning (PBL) format focused on the biological, social, economic, and ethical implications of specific clinical cases. Prerequisites: Biological Sciences 93, 94, 97, 98, and 99, or equivalent.

D121 Stem Cell Biology (4). Lecture, three hours. Introduces upper-level undergraduate students to stem cell biology. Include the basic biology of stem cells, potential applications of stem cells, and the ethical, legal, and moral issues associated with human stem cell research. Prerequisites: Biological Sciences D103 and D104.

D124 Biology of Integrative Medicine (4). Lecture, three hours. Presentation of biological principles and the latest clinical and basic research on complementary and alternative therapies (e.g., mind-body medicine, energy medicine, herbal medicine, acupuncture, manipulative therapies) and their integration with Western medicine. Lectures supplemented by demonstrations and hands-on learning sessions. Only one course from Biological Sciences D124, 9J, and 9N may be taken for credit.

D125 The Biology and Genetics of Cancer (4). Cancer is a major field in modern biology. Topics discussed include genetics, cellular oncogenes, tumor suppressor genes, and molecular targets for diagnosis and therapy. Prerequisite: Biological Sciences 99.

D126 Systems Biology of Human Disorders (4) F, W, S. Lecture, three hours; discussion, one hour. Introduces human pathophysiology using a systems biology perspective. Focuses on the proper regulation of human systems, and the dire consequences of loss of regulation. The goal is to impart an "engineering" mind-set to understand human disorders. Prerequisites: Biological Sciences 99 or Engineering BME50A-B and Mathematics 2A-B.

D129 Biotechnology and Plant Breeding (4) S. Lecture, three hours. Synopsis of conventional plant breeding techniques, their limitations, and supplementations through modern biotechnology. These new biotechnological methods include steps such as cloning, cell transformation (genetic engineering), and cell fusion. Focuses on crop improvement, the state of the art in animal and human systems, and the impact of gene technology on society. Prerequisite: Biological Sciences 94 or consent of instructor.

D130 Photomedicine (4) W. Lecture, three hours; discussion, one hour. Studies the use of optical and engineering-based systems (laser-based) for diagnosis, treating diseases, manipulation of cells and cell function. Physical, optical, and electro-optical principles are explored regarding molecular, cellular, organ, and organism applications. Prerequisites: Physics 3C or 7D, or Engineering EECS12, or consent of instructor. Same as Engineering BME135.

D136 Human Anatomy (4) F. Lecture, three hours; discussion, one hour. Presents a systems approach to the analysis of human structure. Molecular, cellular, tissue, organ, and organ system levels of structure and organization are integrated throughout. Prerequisite: Biological Sciences 99.

D137 Eukaryotic and Human Genetics (4) F. Lecture, four hours. Structure and function of genes in eukaryotes with emphasis on special problems of genetic studies in humans. Molecular methods of genetic analysis and gene transfer are discussed. Practical applications and ethical and social issues raised by genetic studies are addressed. Prerequisites: Biological Sciences 97; Biological Sciences 99 recommended.

D145 Genomics and Proteomics (4) W. Lecture, three hours. Focuses on the applications of genomics and proteomics to problems in genetics, cell, and developmental biology. Students gain a comprehensive understanding of the techniques currently used for genomics analysis and how best to apply these tools to solve research problems. Prerequisites: Biological Sciences 97, 98, 99.

D148 Development and Disease (4) S. Lecture, three hours. Development of animal embryos from a fertilized egg to a functioning organism. Topics include body-axis formation, growth and differentiation of embryonic cells, and organogenesis, with an emphasis on congenital birth defects and diseases that disrupt these processes. Prerequisite: Biological Sciences D104.

D151 Advanced Cell Biology (4) W. Lecture, four hours. Plasma membrane and cytoskeletal-mediated events. Topics include: endocytosis, receptor-lig- and interactions, the biochemical basis of growth control, cell structure and motility, and cell-cell, cell matrix interactions. The biochemistry and molecular aspects of these topics are emphasized. Prerequisite: Biological Sciences D103.

D153 Molecular and Cellular Basics of Disease (4). Lecture, three hours. Provides students with examples of how human disease is usually manifested at the cellular level. The roles of specific molecules and organelles are discussed where their roles in the disease process are understood. Prerequisite: Biological Sciences D103.

D154 Cell Biology (4) F. Lecture, three hours. An advanced, integrated view of cell biology. Topics include the cell cycle, the cytoskeleton, the extracellular matrix, signal transduction, the cellular basis of development, and the cell biology of cancer. Prerequisite: Biological Sciences D103 or 107.

D155 Systems Cell and Developmental Biology (4) W. Lecture, three hours. Introduces concepts needed to understand cell and developmental biology at the systems level, i.e., how the parts (molecules) work together to create a complex output. Emphasis on using mathematical/computational modeling to expand/modify insights provided by intuition. Concurrent with Developmental and Cell Biology 232.

D190 Topics in Developmental and Cell Biology (2 to 4) F, W, S. Lecture, two hours. Studies in selected areas of developmental and cell biology. Prerequisites: Biological Sciences D103; limited to School of Biological Sciences majors with upper-division standing. May be taken for credit three times as topics vary.

ECOLOGY AND EVOLUTIONARY BIOLOGY

E107 Seminar in Ecology and Evolutionary Biology (2) F, W, S. Seminar, one and one-half hours. Invited speakers, graduate students, and faculty present current research in ecology and evolutionary biology. Pass/Not Pass only. Open only to upper-division Ecology and Evolutionary Biology majors.

E118 Ecosystems Ecology (4) F, W, S. Lecture, three hours. A mechanistic perspective on ecosystem processes. Covers ecosystem development, element cycling, and interactions with plants and microbes. The role of ecosystems in environmental change is also addressed. Prerequisite: Chemistry 51C. Same as Earth System Science 164. Concurrent with Earth System Science 264.

E124 Infectious Disease Dynamics (4) F, W, S. Lecture, three hours. Discusses how the dynamical interactions between pathogens and the immune system can give rise to a variety of outcomes which include clearance of infection, persistent infection, escape from immune responses, and pathology. Prerequisite: Biological Sciences 96 or E106 or 97.

E127 Physiological Plant Ecology (4) F. Lecture, three hours. An examination of the interactions between plants and their environment. Emphasis on the underlying physiological mechanisms of plant function, adaptations and responses to stress, and the basis of the distribution of plants and plant assemblages across the landscape. Prerequisites: Biological Sciences E106 or Earth System Science 51 or 60A and 60C. Same as Earth System Science 168. Concurrent with Earth System Science 268.

E135 Molecular Evolution (4) W. Lecture, three hours. Introduction to the study of evolutionary change in genes and DNA sequences. Combines study of molecular biology with the study of evolution. Molecular evolution has application to many disciplines, including molecular biology, virology, systematics, and the origin of life. Prerequisite: Biological Sciences E106.

E136 The Physiology of Human Nutrition (4) S. Lecture, three hours. Examines the biochemical basis of energy metabolism, physiological processes in digestion and uptake, and the biochemical transformation of carbohydrates, fats, and proteins in the human body. The emphasis is on expanding the students' understanding of physiology. Prerequisites: Biological Sciences 98 and E109.

E137 Genetics of Complex Traits (4) F, W, S. Lecture, three hours; discussion, one hour. Many ecologically important traits (e.g., size, age at sexual maturity) and clinical conditions are rooted in the interaction of multiple genetic loci with the environment. Theoretical and practical approaches to dissecting the genetic architecture of complex traits are explored. Prerequisites: Biological Sciences 96 or E106, and 97; Biological Sciences 7 or Mathematics 7 recommended.

E138 Comparative Animal Physiology (4) S of odd years. Lecture, three hours. Maintenance aspects of physiology: water balance; feeding and digestion; metabolism; respiration and circulation. Prerequisite: Biological Sciences E109.

E142 Writing/Philosophy of Biology (4) F, W, S. Lecture, three hours. Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Course work includes one 4,000-word and four 1,000-word papers. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Philosophy 142 and Logic and Philosophy of Science 142.

E150 Conservation Biology (4) W. Lecture, three hours. Topics for lecture and discussion: current crisis in species extinction and human impacts on the biosphere. Value of species and ecosystems to humans. Effects of ecosystem degradation on societies in the past. Current efforts at conservation and restoration, with political and economic considerations. Prerequisite: Biological Sciences 94.

E151 Population Dynamics in Ecology, Epidemiology, and Medicine (4) S. Lecture, three hours. Explore the dynamics of populations on an ecological, epidemiological, and medical level. Considers the dynamics of competition, predation, and parasitism; the spread and control of infectious diseases; and the *in vivo* dynamics of viral infections and the immune system. Prerequisite: Biological Sciences 94 or E106. Concurrent with Ecology and Evolutionary Biology 251.

E153 Functional and Structural Evolutionary Genomics (4) W. Lecture and computer lab, four hours. Function and organization of genomes analyzed from an evolutionary perspective. Review of some of the most recent experimental approaches in genome analysis and comparative genomics. Relevant software to analyze DNA and expression data is used. Prerequisite: Biological Sciences 97. Recommended: Biological Sciences E135 or E168, and Biological Sciences 7 or Statistics 7/Mathematics 7. Concurrent with Ecology and Evolutionary Biology 253.

E157 Comparative Vertebrate Anatomy (4) W. Lecture, three hours. Structure and evolution of the major organ systems in vertebrates, from fish to mammals. Prerequisite: Biological Sciences 94.

E160 Ornithology (4). Lecture, three hours. A thorough introduction to the biology of birds, covering topics ranging from avian anatomy and physiology to behavior, natural history, ecology, genetics, evolution, systematics, and conservation. Examples from both local and global avifauna. Prerequisite: Biological Sciences E106. Concurrent with Ecology and Evolutionary Biology 260.

E161L Ornithology Laboratory (4). Laboratory, three hours. An elective companion course to Biological Sciences E160 consisting primarily of field trips to nearby sites to identify local birds and study avian natural history. Some field trips may depart campus as early as 7 a.m. Corequisite or prerequisite: Biological Sciences E160.

E163 Environmental Microbiology (4) F. Lecture, three hours. Establishes a fundamental understanding of microbes living in the environment, including their distribution, diversity, and biochemistry, and discusses how they attribute to global biogeochemical cycles. Prerequisites: Biological Sciences E106 or Earth System Science 53 or 60A and 60C. Same as Earth System Science 170. Concurrent with Earth System Science 270.

E167 Plant Population Biology (4) F of odd years. Lecture, three hours. Current topics in plant population biology are reviewed in an ecological and evolutionary context. Topics include aspects of population genetics, population ecology, evolutionary ecology, and applications to conservation biology. Discussions of current literature. Prerequisites: Biological Sciences 94 and E106.

E168 Evolution (4) S. Lecture, three hours. An integrative treatment of evolutionary biology that covers evolutionary processes, basic research methods, and the history of life. Prerequisite: Biological Sciences E106.

E170 Mechanical Physiology (4). Lecture, three hours. Explores the mechanics of animal physiology. Basic biomechanical principles are introduced and illustrated in a variety of physiological systems. Topics include the fluid and structural mechanics of muscles, skeletons, circulation, insect flight, biomaterials, and fish swimming. Prerequisite: Biological Sciences E109.

E172 Systematics and Evolution of Flowering Plants (4) S of odd years. Lecture, three hours. Basic systematic concepts including phylogenetic analysis, introduction to major groups of flowering plants, analysis of evolutionary significance of characters used in systematic studies. Prerequisite: Biological Sciences E106. Concurrent with Ecology and Evolutionary Biology 272.

E172L Plant Systematics Laboratory (4) S. Laboratory, two hours; Field work, one hour. Diversity of flowering plants is investigated in the laboratory and field. Familiarity with flowering plant families, particularly those prominent in the California flora, is emphasized. Prerequisites: Biological Sciences E106 and prior or concurrent enrollment in E172. Concurrent with Ecology and Evolutionary Biology 273.

E174 Behavioral Ecology (4) F, W, S. Lecture, three hours; discussion, two hours. Animal behavior as an evolutionary solution to problems encountered during an animal's life cycle. Includes a broad comparative approach to communication, social behavior, habitat selection, and food finding. Prerequisite: Biological Sciences E106 or consent of instructor.

E175 Restoration Ecology (4) F, W, S. Lecture, two hours; field work, two hours. Theoretical and practical aspects of habitat restoration and mitigation. Design, implementation, and monitoring of restoration projects in local habitats. Collection of seed and cuttings, planting and maintenance presented. Control of exotics in natural areas discussed. Environmental ethics of restoration emphasized. Prerequisite: Biological Sciences E106.

E176 Evolution of Infectious Disease (4) W of even years. Lecture, three hours; discussion, one hour. Introduction to the major human pathogens, and the ecological and evolutionary processes affecting their impact on public health. Topics include the evolution of drug resistance, problems in vaccine development, diseases emerging from animals, and bioterrorism. Prerequisite: Biological Sciences 97.

E178 Ocean Ecology (4) W of even years. Lecture, three hours; discussion, one hour. Examines the relationships between physical processes in the ocean, biological productivity, and the exploitation of ocean resources by high-trophic-level predators, including humans. Discusses open ocean ecosystems, intertidal and benthic regions of the world ocean. Prerequisite: Biological Sciences 94.

E179 Limnology and Freshwater Biology (4) F, W, S. Lecture, three hours; discussion, one hour. Biology of freshwater environments: lakes, ponds, rivers, their biota, and the factors which influence distribution of organisms. Prerequisite: Biological Sciences 94.

E179L Field Freshwater Ecology (4) S. Field work, three hours. Analytical techniques for common water-quality variables of lakes, streams, rivers. Benthic fauna, vertebrates, and invertebrates, algae, and aquatic plants. Emphasis on field methods with an experimental approach; laboratory exercises. Field trips to marshes, lakes, vernal pools, rivers, and streams. Corequisite or prerequisite: Biological Sciences E179.

E182 Mediterranean Ecosystems: Biodiversity and Conservation (4) W. Lecture, three hours. Biodiversity, history of human impacts, and conservation efforts are examined in the five Mediterranean-type ecosystems. The extent of remaining natural habitat, approaches to ecological habitat restoration, control of exotic species, and predicted consequences of global climate change are described. Prerequisite: Biological Sciences E106.

E183 Exercise Physiology (4) S. Lecture, three hours. Focus upon critical topics in the area of exercise biology using the comparative physiological approach. Specifically examine the physiological factors that limit the capacity of an organism to sustain high levels of aerobic metabolism. Prerequisites: Biological Sciences 98, D104, and E109.

E184 Ecology and Diversity of Insects (4) W of odd years. Lecture, three hours. Insects—representing two-thirds of all species—play fundamental roles in human health, agriculture, and natural ecosystems. Topics include insect morphology, development, physiology, taxonomy, ecology, and insects in human affairs. Lecture includes interactive demonstrations and an optional weekend trip. Prerequisite: Biological Sciences E106 or consent of instructor.

E185 Plant-Animal Interactions (4) W of even years. Lecture, two hours; laboratory, four hours. Ecology and evolution of mutualistic and antagonistic interactions between plants and animals. Topics include pollinator behavior, plant reproductive systems, plant defense mechanisms, and herbivore diet choice. Field-oriented laboratory. Prerequisites: Biological Sciences 97 and E106.

E186 Population and Community Ecology (4) W. Lecture, three hours. Population structure, function, development, and evolution. Topics include population structure, population growth and regulation, metapopulations, predation, competition, species diversity, ecosystem function, macroecology, and island biogeography. Prerequisite: Biological Sciences E106.

E188 Introduction to Insect Physiology (4) W of even years. Lecture, three hours. Physiology of insects. Insect respiration, digestion, excretion, and neurobiology, including sensory systems and effectors. Prerequisites: Biological Sciences D104 and E109.

E189 Environmental Ethics (4) W. Lecture, three hours. History of evolution of environmental ethics in America. Management problems in national parks, wilderness areas, wild and scenic rivers, national forests. Contemporary and historical aspects/contributors to the field. Mitigation, endangered species, habitat restoration, biodiversity, and environmental activism. Field trips required. Prerequisite: upper-division standing.

E190 Topics in Ecology and Evolutionary Biology (2 to 4) F, W, S. Lecture, two to four hours. Studies in selected areas of ecology and evolutionary biology. Prerequisite: Biological Sciences E106. May be taken for credit three times as topics vary.

MOLECULAR BIOLOGY AND BIOCHEMISTRY

M114 Advanced Biochemistry (4) F, W, S. Lecture, three hours; discussion, one hour. Physical-chemical properties of macromolecules. Structure-function relationships in nucleic acids, protein, carbohydrates, and lipids. Integration and regulation of metabolism. Biochemistry of organs and biochemistry of diseases. Prerequisite: Biological Sciences 99.

M116 Advanced Molecular Biology (4) F, W, S. Lecture, three hours; discussion, one hour. Mechanisms of gene expression; special emphasis on regulatory events that occur in Eukaryotic organisms other than initiation of transcription. Chromatin structure and rearrangement, RNA polymerases, cis- and trans-acting elements, RNA processing, transport and stability, protein synthesis, trafficking, and turnover. Prerequisites: Biological Sciences 99, and M114L or M116L.

M119 Advanced Topics in Immunology (4) S. Lecture, one-half hour; discussion, two and one-half hours. Literature-based, interactive discussions focused on review of seminal historic and recent immunology literature. Student responsibilities include reading, critical evaluation, and discussion of manuscripts. Prerequisite: Biological Sciences M121. Concurrent with Molecular Biology and Biochemistry 221.

M120 Signal Transduction in Mammalian Cells (4) F. Lecture, three hours. Introduction to major biochemical pathways that transmit information from extracellular cues into changes in cell behavior. Focuses on kinases, phosphateses, G proteins, second messengers, and protein-protein interactions. Includes discussion of primary research articles and experimental techniques. Prerequisite: Biological Sciences D103.

M121 Immunology with Hematology (4) W. Lecture, three hours; discussion, one hour. Antibodies, antigens, antigen-antibody reactions, cells and tissues of lymphoreticular and hematopoietic systems, and individual and collective components of cell-mediated and humoral immune response. Prerequisite: Biological Sciences 98 or consent of instructor.

M122 General Microbiology (4) F, S, Summer. Lecture, three hours; discussion, one hour. Comparative metabolism of small molecules and cell structure and relationship to microbial classification. Macromolecule synthesis and regulation, sporulation, cell division, growth, and effect of antibiotics. Prerequisite: Biological Sciences 98.

M123 Introduction to Computational Biology (4) S. Lecture, three hours; laboratory, two hours. The use of theories and methods based on computer science, mathematics, and physics in molecular biology and biochemistry. Basics in biomolecular modeling. Analysis of sequence and structural data of biomolecules. Analysis of biomolecular functions. Prerequisite: Mathematics 2D or 2J or 7 or Statistics 8. Same as Computer Science 183. Concurrent with Molecular Biology and Biochemistry 223.

M124A Virology (4) F. Lecture, three hours; discussion, one hour. Replication of viruses in populations, animals, and the host cell. The effects of viral infection on populations, individuals, and specific molecular effects on the target cell. Role of viral infections in cancer and degenerative diseases. Prerequisite: Biological Sciences 99.

M124B Viral Pathogenesis and Immunity (4) W. Lecture, three hours. The mechanisms of viral pathogenesis and of host resistance to viruses are explored in detail. HIV-1 and Influenza-A are used as examples. In each case, viral replication, cytopathic effects, immune response, and viral evasion are discussed. Prerequisites: Biological Sciences M121 or M124A, or consent of instructor; Biological Sciences M122 recommended.

M125 Molecular Biology of Cancer (4) S. Lecture, three hours. Molecular mechanisms of carcinogenesis. Consideration of transformation by DNA tumor viruses, RNA tumor viruses, and chemical carcinogens. Prerequisite: Biological Sciences 99 or consent of instructor.

M127L Virology and Immunology Laboratory (5) S. Laboratory, four hours; lecture, one hour. Introductory laboratory course in virology and immunology designed for biology majors. Curriculum includes plasmid preparation, plasmid characterization, microscopy, cell culture, transfection and infection of cells, cell counting, plaque assays, ELISA, Western blot, mixed lymphocyte reactions. Corequisite: Biological Sciences M121 or M124A. Prerequisite: Biological Sciences 99, M116L.

M128 Genetic Engineering (4) S. Lecture, three hours. Basic biochemical and molecular biology of restriction endonucleases. Vectors for recombinant DNA. Cloning of genes. Sequence analysis of genes. Prerequisite: Biological Sciences 98; Biological Sciences 99 recommended.

M133 High-Resolution Structures: NMR and X-ray (4) F of even years. Lecture, three hours. Basic principles of magnetic resonance and x-ray crystallography toward the determination of high-resolution biomolecular structures. Prerequisites: Mathematics 2B and consent of instructor. Concurrent with Molecular Biology and Biochemistry 211.

M137 Microbial Genetics (4) W. Lecture, three hours; discussion, one hour. Prerequisites: Biological Sciences 97 and 98. Recommended: concurrent enrollment in Biological Sciences 99.

M143 Human Parasitology (4) S. Lecture, three hours. Introduction to human animal-parasitic diseases including worms and protozoan infections. Prerequisite: Biological Sciences 99. Formerly Biological Sciences D143.

M144 Cell Organelles and Membranes (4) S. Lecture, three hours. Structure, function, and biogenesis of biological membranes and membrane-bound organelles; protein trafficking and transmembrane signaling. Prerequisite: Biological Sciences D103.

M160 Structure-Function Relationships of Integral Membrane Proteins (4) W. Lecture, three hours. Integral membrane proteins such as voltage and ligand-gated ion channels, water channels, pumps, cotransporters, and receptors (e.g., GPCRs). The emphasis is on the relationship between atomic structure and the functional properties of these proteins. Prerequisites: a grade of B or better in Biological Sciences 98 and 99. Concurrent with Molecular Biology and Biochemistry 255.

M190 Topics in Molecular Biology and Biochemistry (2 to 4) F, W, S. Lecture, two to four hours. Studies in selected areas of Molecular Biology and Biochemistry. Prerequisite: Biological Sciences 98 or consent of instructor. May be taken for credit three times as topics vary.

NEUROBIOLOGY AND BEHAVIOR

N112A-B-C Neuroscience: Fundamental Concepts and Current Applications (3-3-3) F, W, S. Lecture, three hours; seminar, one hour. In-depth exploration of the intellectual tools used to create, advance, and disseminate knowledge about the nervous system. Develops analytical, reasoning, and communication skills by exploring fundamental issues of data interpretation in cellular, molecular, systems, and behavioral analyses of brain function. Prerequisite: Biological Sciences N110.

N119 History of Neuroscience (4) F, W, S. Lecture, three hours. An overview of the conceptual and technical foundations of contemporary neuroscience from ancient times to the present. The subjects include synapses, neurons, brain organization, sensory, motor and regulatory systems, learning and memory, human brain function and dysfunction. Prerequisites: Biological Sciences 35 or N110, or Psychology and Social Behavior P115D, or Psychology 9A-B-C, or consent of instructor. Concurrent with Neurobiology and Behavior 255.

N147 Hearing and the Brain (4) F. Lecture, three hours. An overview of brain mechanisms of hearing, including perception of simple sounds, speech, and music. Begins with sound itself, and looks at processing by the ear, auditory pathways, auditory cortex, and beyond. Also auditory development, learning, and clinical issues. Prerequisite: Biological Sciences N110 or Psychology 160A. Same as Psychology 161H.

N150 Brain Dysfunction and Repair (4). Lecture, three hours. Introduction to the disruptions in brain function that underlie disorders such as Alzheimer's disease, Parkinsonism, schizophrenia, and depression, and the basis for drug therapies. The brain's ability to repair itself after damage and the pros and cons of that repair. Open to majors only.

N153 Neuropharmacology (4) S. Lecture, three hours. Survey of neurotransmitter systems, focusing on how transmitters are made, how they interact with their receptors, and how drugs can influence these processes to alter neural function and behavior. Prerequisite: Biological Sciences N110.

N154 Molecular Neurobiology (4) F, W, S. Lecture, three hours. Nature and actions of genes and gene products that regulate the functioning of the nervous system and its interaction with muscles. Topics include: neural control of gene expression; genetics and molecular biology of neural and neuromuscular diseases; gene therapies for neural disorders. Prerequisite: Biological Sciences N110.

N158 Neurobiology of Learning and Memory (4). Lecture, three hours. How the brain and behavior change as a result of experience, with an emphasis on identifying the neurochemical processes through which memory is stored and the parts of the brain that are involved. Prerequisite: Biological Sciences 35 or N110. Same as Psychology 162A.

N159 Animal Behavior (4) S. Lecture, three hours. Explores why animals behave the way they do from both evolutionary and mechanistic perspectives. Considers selective pressures and evolutionary constraints that shape animal behavior and the underlying neural and hormonal mechanisms by using examples such as why dogs bark, why some birds migrate. Prerequisite: Biological Sciences N110.

N160 Language and the Brain (4) W. Lecture, three hours. Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 35 or N110, or consent of instructor. Same as Psychology 161 and Linguistics 158.

N162 Neuroscience of Human Memory (4) S. Lecture, three hours. Overview of topics in the cognitive neuroscience of human long-term memory and their relevance to an understanding of clinical disorders of memory. Methods of investigation of dual process models, human memory, functional architecture of memory, implicit vs. explicit distinction, control processes. Prerequisite: Biological Sciences N112B.

N164 Functional Neuroanatomy (4) F, W, S. Lecture, three hours. How neuroscience uses tools of many disciplines, from imaging to behavior, to develop and test hypotheses about functions of specific parts of the brain. Basic organization of nerve cells and vertebrate nervous system; methods of visualizing nerve cells; neural connections, neural activity patterns. Prerequisite: Biological Sciences N110.

N165 Brain Disorders and Behavior (4). Lecture, three hours. Examines the localization of human brain functions and the effects of neurological disorders on psychological functions such as perception, motor control, language, memory, and decision-making. Prerequisites: Psychology 7A or 9A, B, or Psychology and Social Behavior 9 or 11A, B, or Biological Sciences 35, or equivalent, or consent of instructor. Same as Psychology 160D.

N166 Introduction to Cognitive Neuroscience (4). Lecture, three hours; discussion, one hour. Introduction to the neural basis of human perceptual, motor, and cognitive abilities. Topics include sensory perception, motor control, memory, language, attention, emotion, frontal lobe function, functional brain imaging, and neuropsychological disorders. Prerequisite: Biological Sciences 35, or Psychology and Social Behavior 9 or 11A, B, or Psychology 7A or 9A, B, or consent of instructor, or equivalent. Same as Psychology 160A and Psychology and Social Behavior 192L.

N182 Vision (4). Lecture, three hours; discussion, one hour. Visual perception and the anatomy and physiology of the visual system. Topics include: the retina and the visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and the development of the visual system. Same as Psychology 131A. Psychology 130A may not be taken for credit after Biological Sciences N182.

N190 Topics in Neurobiology and Behavior (2 to 4) F, W, S. Lecture, four hours. Studies in selected areas of neurobiology and behavior. Prerequisite: Biological Sciences N110. May be taken for credit three times as topics vary.

Seminars and Special Courses

191A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 191A-B, grade for sequence given upon completion of 191C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Earth System Science 190A-B and Social Ecology 186A-B.

191C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Biological Sciences 191A-B and satisfaction of the lower-division writing requirement. Same as Earth System Science 190C and Social Ecology 186C.

192 Tutoring in Biology (2). Enrollment limited to participants in the Biological Sciences Peer Tutoring Program. Prerequisite: consent of instructor. May be repeated. No more than eight units earned in this course may be counted toward the 180 units required for graduation. Satisfies no degree requirement other than contribution to the 180-unit total.

193 Research Writing for Biological Science Majors (4). Under the guidance of selected faculty in the School of Biological Sciences and a writing professional, students learn to conduct library research in the field of biology and to write scientific review papers. Prerequisite: upper-division Biological Sciences major.

194 Current Topics in Biology (1) F, W, S. A seminar designed to discuss recent research findings and experimental issues in biology. Meets once each week for one hour. Corequisite: Biological Sciences 199.

194S Safety and Ethics for Research (1) F, W, S. Introduces students to the concepts, techniques, and ethics involved in biological sciences laboratory work. Pass/Not Pass only.

H195 Honors Seminar in Biological Sciences (1) S. Contemporary research problems in biological sciences. Participating students and faculty present their research findings as well as examine and discuss research in related fields. Writing instruction for participation in Excellence in Research takes place during required workshops in the fall quarter. Limited to students in the Biological Sciences Honors Program.

H195A Honors Writing for Biological Research (4) S. Lecture, two hours; laboratory, two hours. A science writing and critical reasoning course. Work, research, and writing exercises are conducted in a computer laboratory with full Internet access to library and other information resources. Students complete a number of preliminary writing exercises and then further develop their Excellence in Research report to a full scientific senior thesis. This forms the basis for an oral defense. Prerequisites: three quarters of Biological Sciences 199 research, participation in Excellence in Research, and satisfactory completion of the lower-division writing requirement; open only to students eligible for the Honors Program.

H195B Honors Physiology (4) S. Seminar, three hours. Contemporary research problems in physiology using insects as model systems. Topics include digestion, osmoregulation, development, and neurobiology, including sensory systems and behavior. Participating students present papers in a journal club-style format and write short essays summarizing research findings. Prerequisites: limited to students in the Biological Sciences Honors Program and graduate students; consent of instructor.

H195C Honors Virus Evolution (4) S. Lecture, three hours; discussion, one hour. Viruses infect all domains of life and have had profound consequences on the development and survival of life. Course examines virus emergence and evolution in a broad context. Weekly overview lecture is followed by student presentations and essays based on contemporary literature. Prerequisite: Biological Sciences M124A or consent of instructor.

196 Writing for Biology Research (4) W. Lecture, two hours; laboratory, two hours. A science writing and critical reasoning course to be taken the quarter prior to participation in the Excellence in Research Program. Students work in a computer laboratory with full access to writing, library, and network resources and prepare and review a formal scientific paper. Prerequisites: two quarters of Biological Sciences 199; satisfactory completion of the lower-division writing requirement. Enrollment preference given to students who have taken two or more quarters of Biological Sciences 197.

196A Seminar in Interactive Teaching in Biology (2) F. Students receive formal training in use and assessment of interactive teaching strategies in university-level biology classes. Additional aspects of course design and implementation are covered. Recommended for undergraduates involved in the BioSci Peer Tutoring Program. May be taken for credit two times.

198A-B-C Directed Group Studies (1 to 5) F, W, S. Small group experimental laboratory or fieldwork performed under the influence of a faculty member. Prior to beginning group studies, each student must submit an abstract which must be filed in the Biological Sciences Student Affairs Office and renewed yearly, if applicable. A Summary Report must be submitted at the end of each quarter. May be graded In Progress. Prerequisites: Biological Sciences 194S and consent of instructor. May be taken for credit three times.

Independent Study

Independent-study credit for undergraduates is limited to five units per quarter.

197A-B-C Special Study in Biological Sciences (1 to 4 per quarter) F, W, S. Tutorial, one to four hours. Library research, tutorial, and other independent projects under individual professors. Individualized instruction dealing with conceptual or theoretical problems in the biological sciences, rather than technical problems. Regularly scheduled meetings between student and faculty member and successful completion of a written report. Prerequisite: consent of instructor. An abstract form must be filed in the Biological Sciences Student Affairs Office. May be graded "IP." May be repeated for credit.

199 Independent Study in Biological Sciences Research (1 to 5 per quarter) F, W, S. Individual experimental laboratory or field research under a professor's direction. Required for participation in the Excellence in Research Program. Further information and a booklet describing many prospective projects are available in the Biological Sciences Student Affairs Office. Prerequisites: Biological Sciences 194S and consent of instructor. An abstract form must be filed in the Biological Sciences Student Affairs Office. May be repeated for credit as topics vary.

GRADUATE STUDY IN BIOLOGICAL SCIENCES

The School of Biological Sciences offers graduate study in a wide variety of fields ranging across the spectrum of the biological sciences. The four Departments of the School of Biological Sciences (Developmental and Cell Biology, Ecology and Evolutionary Biology, Molecular Biology and Biochemistry, and Neurobiology and Behavior) and five basic science Departments of the School of Medicine (Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, Pathology and Laboratory Medicine, and Physiology and Biophysics), representing respective concentrations of study under the Ph.D. degree in Biological Sciences, cooperate in the conduct of graduate education administered by the School of Biological Sciences. Although students are admitted to the Doctor of Philosophy (Ph.D.) degree program, the Master of Science (M.S.) degree may be earned in pursuit of the Ph.D. Additionally, a master's program in Biotechnology (M.S. degree in Biological Sciences) and a master's program in Ecology and Evolutionary Biology (M.S. degree in Biological Sciences) are offered. Each department has a graduate advisor whom students may consult for additional details of the individual programs.

Applications for admission to graduate study are evaluated by the department or program based on letters of recommendation, Graduate Record Examination scores, grades, research experience, and other relevant qualifications of the applicant. Candidates for graduate admission are urged to consult the particular department or program whose faculty and expertise best fit their interests and background.

MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY IN THE BIOLOGICAL SCIENCES

While both the Master of Science and Doctor of Philosophy programs are offered, emphasis at the graduate level is on the Ph.D. programs, with the exception of the master's programs in Biotechnology and in Ecology and Evolutionary Biology. Most training takes place within one of the departments, although full facilities and curricular offerings are available to all graduate students in all departments of the Biological Sciences. Interdisciplinary study and research are encouraged.

Students are expected to maintain a B average at all times. The normative time to degree for the master's degree is two years, and five years for the doctoral degree. A master's degree is not a prerequisite for the Ph.D. degree.

Students plan their academic program in consultation with the graduate advisor or a faculty committee. Faculty advisors may be changed to meet the needs and interests of the student. In addition, it is possible for students to transfer to another program in the School, subject to the approval of the Dean of Graduate Studies, and acceptance into that program. Students are encouraged to consult with faculty members with regard to their research and academic interests.

During their graduate training all doctoral students are required to serve at least two quarters as a 50-percent teaching assistant under the direction of laboratory coordinators or faculty. Advanced graduate students may work closely with faculty in the planning and execution of the teaching program. The amount and nature of the teaching experience varies with the department.

Master of Science

Depending upon the program, there are two plans by which a Master of Science degree may be obtained.

Plan I: Thesis Plan. The student completes seven upper-division and graduate courses including a minimum of five non-research courses. The student then presents a thesis based upon research done while in the School.

Plan II: Comprehensive Examination Plan. The student completes a minimum of nine upper-division and graduate courses. At least six must be graduate courses (numbered 200–299) in the student's field of specialization. The master's is awarded after completion of a comprehensive final examination.

Doctor of Philosophy

Comprehensive Examination-First Year. The student must pass comprehensive oral or written examinations at the discretion of the department. The examination is generally taken at the end of the first year of graduate study.

Advancement to Candidacy. The advancement to candidacy examination is taken in the third year of graduate study. The student is expected to have identified an important and tractable dissertation research topic. A faculty committee for the advancement to candidacy examination is appointed by the School, on behalf of the Dean of the Graduate Division and the Graduate Council.

Once this examination is completed, the student is advanced to candidacy for the doctoral degree and is expected to complete the degree within three years. The student must submit a dissertation on this research and defends the thesis in an oral examination during the final year of graduate study. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Graduate student status or consent of instructor is a prerequisite for all 200–299 courses.

Master of Science with a Concentration in Biotechnology

Department of Molecular Biology and Biochemistry
3205 McGaugh Hall; (949) 824-6034
catemple@uci.edu; http://www.bio.uci.edu/
Michael G. Cumsky, **Director**

The field of biotechnology has developed explosively since the discovery of gene cloning and sequencing methods in the mid-1970s. The field is now represented by many active and successful companies who share an intense demand for well-trained people with up-to-date research skills in the manipulation of nucleic acids, proteins, immunological reagents, and pathogenic organisms. The program in Biotechnology features two tracks leading to an M.S. degree in Biological Sciences. The first is the traditional program, and the second, which takes advantage of a defined area of campus research strength, provides an emphasis in stem cell biology. Both tracks incorporate extensive training from both teaching laboratories and actual research settings (individual faculty laboratories). Focus is placed on techniques relevant to industry and seminar exposure to the nature of industry. It is designed to train students to enter the field of biotechnology as skilled laboratory practitioners. Emphasis is placed on learning state-of-the-art technology in protein isolation and characterization, animal and microbial cell culture, virology, immunology, and/or stem cell biology. Students are trained in experimental rationales for solving actual research problems and are encouraged to take summer internships in industry between the first and second year of their studies.

The Department of Molecular Biology and Biochemistry evaluates applicants to the program on the basis of grades, letters of recommendation, GRE scores, and other relevant qualifications. Applicants should have successfully completed a B.S. degree or equivalent. Courses should include general chemistry with laboratory, calculus, physics, organic chemistry, genetics, biochemistry, molecular biology, microbiology, immunology, and virology, as well as laboratory courses in biochemistry, molecular biology, microbiology, and either animal virology or immunology. Enrollment in the

stem cell biology emphasis is limited to eight continuing students per year. Biotechnology graduate students interested in this track apply for admission during the winter quarter of their first year in the program.

The traditional program emphasizes training in laboratory and research environments. First-year students are required to enroll in a series of laboratory courses (Molecular Biology and Biochemistry 221L, 224L, 250L, and 251L) that are designed to teach them techniques in recombinant DNA methodology, protein isolation and characterization, proteomics, animal and microbial cell culture, immunology, and virology. In addition, students are trained rigorously in data recording and presentation as the laboratory notebooks are reviewed and graded by laboratory course instructors. Students are taught formal course work in nucleic acids, proteins, genetic engineering, and molecular/cellular biology. Emphasis during the second year is devoted exclusively to research projects in faculty laboratories, with the exception of one required elective course each quarter (e.g., Developmental and Cell Biology 210, 231B, Molecular Biology and Biochemistry 206, 207). The program concludes with a presentation of the student's research at the end of the second year.

Students enrolled in the stem cell biology emphasis take the same number of laboratory and lecture courses as those in the traditional track. However, in the spring quarter of their first year they must enroll in the stem cell laboratory (taught at the Stem Cell Research Core Facility), and their electives must include the following courses: Stem Cell Policy (Microbiology and Molecular Genetics 230), Stem Cell Biology (Developmental and Cell Biology 245), and Clinical Aspects of Stem Cells (Developmental and Cell Biology 203B, when offered). In addition, their individual research must be conducted in the laboratory of a faculty member utilizing stem cells.

While the Biotechnology program is designed to produce skilled laboratory practitioners for industrial positions, some students may wish to continue in a Ph.D. degree program. The Department of Molecular Biology and Biochemistry is a member of the interdisciplinary graduate program in Cellular and Molecular Biosciences, a program which offers the Ph.D. degree in Biological Sciences. Biotechnology program students who wish to enter the interdisciplinary graduate program upon completion of the M.S. degree should apply for admission during their second year.

INTERDISCIPLINARY GRADUATE PROGRAMS

The School is structured in a manner that encourages an interdisciplinary approach to scientific problems. Interaction and cooperative efforts across traditional institutional boundaries are especially evident in the School's participation in various organized research units (described in the previous Office of Research section) and in the interdepartmental/interschool graduate programs described below.

Graduate Program in Cellular and Molecular Biosciences

4141 Natural Sciences II; (949) 824-8145
http://www.cmb.uci.edu
W. Edward Robinson, Jr., **Director**

The combined graduate program in Cellular and Molecular Biosciences (CMB) provides the first year of instruction for graduate students entering Ph.D. programs in six departments within the School of Biological Sciences and the School of Medicine. Applicants should have significant laboratory experience and be well prepared in calculus, physics, organic chemistry, and biochemistry.

Students in the CMB program will select three didactic courses, one each quarter, from a menu of approved course options. Students will select one course from each key biological category of "Molecules of Life," "Cells and Signaling," and "Integrated Systems and Genetics." The diversity of curriculum options offers students, in cooperation with a faculty advisor, the opportunity to customize the curriculum to the student's research goals and interests. During the first year the students also undertake introductory research in at least two laboratories. Students can select a laboratory rotation from over 100 faculty laboratories in the departments of Biological Chemistry, Developmental and Cell Biology, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, Pathology and Laboratory Medicine, and Physiology and Biophysics. Each faculty member's area of research is described at the beginning of the departmental sections on the following pages. The year culminates in a comprehensive preliminary examination and evaluation.

At the end of the first academic year, students will select a thesis advisor in one of the departments.

During the second year and beyond, students participate in the departmental doctoral program. Students are required to meet all doctoral degree requirements associated with the thesis advisor's department or program, and may be required to take additional course work, and participate in journal club and seminar series. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years. Further information is available in the *Catalogue* sections of the participating departments and through the CMB program office.

Graduate Program in Mathematical and Computational Biology

4213 McGaugh Hall; (949) 824-7927
adetsch@uci.edu; http://mcsb.bio.uci.edu/
Frederic Y.M. Wan, **Director**

The graduate program in Mathematical and Computational Biology (MCB) is a one-year program designed to function in concert with existing departmental programs. Students who successfully complete the MCB program select a thesis advisor from among the participating faculty and then automatically join a departmental program for the remainder of their Ph.D. training. In this way, the MCB serves not as a degree-granting program, but as a "gateway" toward a Ph.D. degree in an existing degree program.

The MCB program provides students with an opportunity for a broad introductory training in mathematical and computational biology, individualized faculty counseling on curricular needs, and exposure to a large and diverse group of faculty and research projects in participating departments of the program. Member departments include Biomedical Engineering, Computer Science, Developmental and Cell Biology, Ecology and Evolutionary Biology, Mathematics, Microbiology and Molecular Genetics, and Molecular Biology and Biochemistry. (Other actively participating departments are Chemistry and Physics; admission to these departments via MCB is currently under review.)

The MCB curriculum is designed to teach students at the beginning of their graduate studies the necessary mathematical, computational, and biological knowledge for successful research at the interface between these disciplines. The needs of students with a variety of backgrounds can be met provided that they have had mathematical training comparable to a standard one-year university-level calculus course and a lower-division university course in elementary differential equations and linear algebra. Exceptional students not meeting these prerequisites may be admitted to the program on the condition that they fulfill these requirements during the first fall quarter of their graduate study or the summer preceding, and pass with a grade of B or better.

All first-year students normally take six four-unit MCB core courses, three quarters in mathematical and computational methods for biology and three in biological sciences. Research laboratory rotations constitute an important component of the first-year training program, providing students with intensive introductions to experimental design and quantitative data analysis as well as familiarizing them with available research opportunities. Students are expected to conduct three rotations in different labs prior to choosing a thesis advisor. Because of the interdisciplinary nature of the MCB program and the diversity of the enrolled students, MCB students are expected to become familiar with both "wet" experimental biology labs as well as with mathematical/computational laboratories.

At the end of the first year, each student will choose a primary thesis advisor from among the participating faculty of the member departments, and will enroll in a departmental Ph.D. program with which the thesis advisor is affiliated. To ensure interdisciplinarity of the thesis project, students who complete the MCB program choose a secondary thesis advisor from a department complementary to the primary thesis advisor's department. Although completion of the Ph.D. will be subject to the degree requirements of the departmental Ph.D. program in which the student enrolls, participating departments have agreed to accept both the course work and research conducted during the MCB gateway year in partial fulfillment of such requirements. The degree to which this is applicable varies. Students must consult with the department of choice for more specific information.

Interdepartmental Neuroscience Program

4145 Natural Sciences II; (949) 824-6226
gp-inp@uci.edu; http://www.inp.uci.edu
Leslie M. Thompson, **Director**

The Interdepartmental Neuroscience Program (INP) is a first-year graduate program that brings together more than 70 faculty from the School of Biological Sciences and the School of Medicine, including participation from the Departments of Anatomy and Neurobiology, Developmental and Cell Biology, Neurobiology and Behavior, and Pharmacology. INP faculty have broad research interests in behavioral neuroscience, brain aging, developmental neurobiology, genetics, learning and memory, molecular neurobiology, cellular neurobiology, neural injury/disorders/repair, neuropharmacology, plasticity, and sensory neuroscience. Neuroscience as a discipline requires scientists to have a detailed understanding of at least one field, and a broad understanding of many other fields. INP provides breadth early on, followed by specialization in years two through five of predoctoral training.

INP organizes and coordinates a core curriculum that provides a foundation in Neuroscience; this forms the basis of future specialized instruction in a participating departmental degree-granting program. This curriculum includes course work and laboratory rotations. Each trainee is assigned a Student Advisory Committee, consisting of three participating faculty members, to assist trainees in tailoring an appropriate course of study based on academic background, interests, and research foci. After successfully completing the core curriculum, students select an advisor from the participating faculty and then are guaranteed automatic admission to the Ph.D.-granting program in their advisor's home department. In this way, INP serves not as a degree-granting program, but as a "gateway" to further graduate training. Students are required to meet all doctoral degree requirements associated with the thesis advisor's department or program.

The program provides trainees with an opportunity (1) to begin training in Neuroscience with a broad academic introduction, (2) to receive individualized attention to curricular needs, (3) to conduct initial research projects with a large and diverse group of faculty in a wide variety of departments, and (4) to conduct dissertation research in any of a large and diverse group of laboratories in a wide variety of departments.

In the first year of study, students must successfully complete one course from each of the molecular, systems, and cellular neuroscience categories. All trainees also participate every quarter in a two-unit course called Foundations of Neuroscience. This mandatory course meets in the fall and winter quarters and is intended to expose students to critical reading and analysis of the primary literature. Students are encouraged to carry out three laboratory rotations of 10 weeks each. With permission from their Advisory Committee, students may carry out fewer rotations. Rotations are graded on a Satisfactory/Unsatisfactory only scale. Trainees are judged as having successfully completed the program provided that they have (1) achieved at least a B+ (3.3) average in the core courses, (2) achieved a satisfactory grade in each quarter of Foundations of Neuroscience, (3) achieved satisfactory grades in all rotations, and (4) identified a participating faculty member who has agreed to serve as their thesis advisor.

The ideal INP candidate will have had a substantial subset of the following courses: biology, chemistry, physics, calculus, neuroscience, psychology, biochemistry, and genetics. Preference will be given to applicants who have had laboratory research experience.

Following completion of the INP and selection of a thesis mentor, students will become members of the faculty member's participating department. In addition to the INP course work requirements, each department has specific requirements to be fulfilled, indicated below.

Developmental and Cell Biology (School of Biological Sciences): Students entering the Developmental and Cell Biology program are required to enroll in and attend the weekly department seminar series (Developmental Biology 290) and Advanced Topics in Cell Biology journal club (Developmental Biology 206). Students are expected to teach (TA) in their second year and enroll in University Teaching (399). Student training will also be individually assessed for possible courses with an emphasis in molecular, developmental biology, or genetics as deemed necessary for successful completion of the thesis research project.

Neurobiology and Behavior (School of Biological Sciences): Neurobiology and Behavior accepts any of the INP core courses toward the requirement of one each from Cellular, Molecular, and Systems categories. INP students who enter Neurobiology and Behavior in their second year must complete the Behavioral Neuroscience (Neurobiology 209) core course. In addition, they will fulfill the requirements met by all continuing students including teaching, advancing to candidacy in their third year, annual meetings with an advisory committee, and completing four advanced courses prior to defending their dissertation in their fifth year. They must also participate in the regular department colloquia. Students also present their research annually in the graduate student NeuroBlitz colloquium series.

Anatomy and Neurobiology (School of Medicine): Students entering the Anatomy and Neurobiology program are required to participate in the Current Topics in Neuroscience journal club (Anatomy 227A-B-C) and attend all department sponsored seminars. They are also required to meet once each year with an advisory committee to monitor their progress and present their research at the annual "Grad Day" meeting. Individual advisors may require students to take other courses depending on their interests and research program.

Pharmacology (School of Medicine): Students entering the Pharmacology program through the INP are required to complete Statistics (Pharmacology 256) and Ethics (Pharmacology 257) during

the summer. They will also fulfill requirements met by all continuing students including the seminar series (Pharmacology 298), research (Pharmacology 299), and advance to candidacy in their third year.

DEPARTMENT OF DEVELOPMENTAL AND CELL BIOLOGY

5205A McGaugh Hall; (949) 824-1721
Ken W.-Y. Cho, **Department Chair**

Faculty

Joseph Arditti *(Emeritus)*: Developmental physiology of orchids
Kavita Arora: *Drosophila* development; TGF-β signal transduction; cell signaling
Lee Bardwell: Intracellular signaling in development and disease
Bruce Blumberg: Gene regulation by nuclear hormone receptors in vertebrate development and adult physiology
Hans R. Bode *(Research Professor)*: Pattern formation and stem cell differentiation
Peter J. Bryant: Tumor-suppressor genes of *Drosophila* and humans
Susan V. Bryant: Molecular basis of limb development and regeneration
Richard D. Campbell *(Emeritus)*: Morphogenesis; biology of *Hydra;* fractal geometry of biological forms
Ken W.-Y Cho: Molecular mechanisms of axis specification in *Xenopus*
Olivier Cinquin: Mathematical modeling of networks, systems biology
Peter J. Donovan: Stem cell biology
Aimee L. Edinger: Cancer biology, cellular growth control, apoptosis
Donald E. Fosket *(Emeritus)*: Regulation of cytoskeleton formation and function
Steven Gross: Force Generation by molecular motors in living cells
David Gardiner: Limb development and regeneration
Patrick L. Healey *(Emeritus)*: Plant cellular differentiation and morphogenesis; ultrastructure and histochemistry of secretory systems; early reproductive development
Franz Hoffmann: Regeneration of cultured plant cells; somatic cell genetics
Lan Huang: Mass spectrometry/proteomics
Daniel J. Knauer *(Emeritus)*: Human antithrombins and related serine protease inhibitors
Stuart M. Krassner *(Emeritus)*: Developmental transitions of hemoflagellates
Arthur D. Lander: Molecular mechanisms of cell and axon guidance; proteoglycans
Eva Y.-H. P. Lee: DNA repair and tumor suppressor genes; cancer biology
Howard M. Lenhoff *(Emeritus)*: Biology of *Hydra;* immobilized enzymes; history of experimental biology
Shin Lin: The combined use of biochemistry, cell biology, molecular biology, and molecular biophysics to study the structure and function of proteins involved in cytoskeletal/contractile functions and signal transduction in muscle and nonmuscle cells
Leslie Lock: Stem cell biology
Grant MacGregor: Mouse reproduction and development
J. Lawrence Marsh: Molecular genetics of development in *Drosophila* and humans
Ronald L. Meyer: Development of nerve connections, nerve injury and regeneration
R. Michael Mulligan: RNA editing in plant mitochondria and chloroplasts
Diane K. O'Dowd: Electrical excitability and synaptic connectivity during development
Thomas F. Schilling: Zebrafish development, vertebrate genetics, and craniofacial development
Christine Suetterlin: Golgi dynamics during the cell sumoylation
Rahul Warrior: Genetics and cell biology of nuclear migration of growth factor signaling
Tau-Mu Yi: G-protein signaling; systems biology

Research programs of the Department of Developmental and Cell Biology focus on molecular aspects of the development of eukaryotic organisms, on the molecular interaction of cells in tissue differentiation, and expression and function of genes related to the biogenesis of organelles and cellular constituents. The main emphasis of research training is in the molecular aspects of cells and development, and the utilization of biotechnology. The Department maintains facilities for research that include genetic, molecular, and biochemical techniques and also has facilities in advanced electron optics, microsurgery, microinjection, and neurophysiology.

The Department offers graduate study in conjunction with the program in Cellular and Molecular Biosciences (CMB), and the Interdepartmental Neuroscience Program, which are described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year. Students participate in the Developmental or Cell Biology Journal Club and the departmental seminar series, which meet weekly during the academic year. In the fall of their third year, students take the advancement-to-candidacy examination by presenting and defending a proposal for specific dissertation research. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Courses in Developmental and Cell Biology

(Schedule of Classes **designation: Dev Bio)**

200A-B-C Research in Developmental and Cell Biology (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor.

200R Research in Developmental and Cell Biology for First-Year Students (2 to 12) F, W, S. Independent research within the laboratories of graduate training faculty in the Department of Developmental and Cell Biology for first-year Ph.D. students. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be taken for credit three times.

201A Advanced Topics in Developmental Biology (2). Seminar, two hours. Advanced study in various fields of organismic biology. Prerequisite: consent of instructor. May be repeated for credit.

202A-B-C Basic Training (2-2-2) F, W, S. Lecture, two hours. Provides students with skills and knowledge needed to make a rapid start in productive research in molecular biology, genetics, and biochemistry. Includes experimental design; laboratory safety; literature management; microscopy; statistics; patents; grantsmanship; publication; presentation; teaching; and responsible conduct of research. Satisfactory/Unsatisfactory only.

203A-B-C Graduate Tutorial in Developmental and Cell Biology (4-4-4) F, W, S. Advanced study in areas not represented by formal courses. May involve individual or small group study through discussion, reading, and composition. Time and subject matter arranged individually.

206A-C Advanced Topics in Cell Biology (2-2) . Seminar, two hours. Advanced study of various topics in cell biology. Prerequisite: consent of instructor. May be repeated for credit.

207 Mouse Developmental Genetics (4) S. Lecture, three hours. Introduction to the use of the mouse in contemporary biomedical research. The biology and development of the laboratory mouse, methods for manipulation of the mouse genome and embryos, and examples of application of these methods to understanding mammalian development and homeostasis. Prerequisite: graduate standing, advanced undergraduate standing, or consent of instructors Same as Biological Chemistry 215.

208 Balancing an Academic Workload (1) F. Seminar, one hour. Students receive formal training in balancing graduate-level biology research with other time commitments, including teaching. Recommended for graduate students who have an active research program and teaching or course work commitments.

209 Molecular Genetics Journal Club (2) F, W, S. Seminar, one and one-half hours. Advanced topics of current interest in molecular and developmental genetics. May be repeated for credit.

210 Advanced Development Genetics (4). Lecture, two hours; discussion, two hours. Focuses on discussion of critical concepts in developmental biology and regeneration, with emphasis on model organisms such as Drosophila, Zebrafish, and murine systems. Molecular mechanisms underlying key developmental decisions also discussed. Prerequisite: consent of instructor.

211 Faculty Research Colloquium (2) F. Research interests of faculty participating in the graduate program in Cellular and Molecular Biosciences are presented in weekly meetings. Corequisite: enrollment in the CMB graduate program.

231B Cell Biology (4) F. Lecture, two hours; discussion, two hours. A broadly based course including topics in extracellular matrix, cytoskeleton, organelle biogenesis, receptor-mediated endocytosis, signal transduction, cell cycle, and developmental biology. Prerequisite: consent of instructor.

232 Systems Cell and Developmental Biology (4) W. Lecture, three hours. Introduces concepts needed to understand cell and developmental biology at the systems level, i.e., how the parts (molecules) work together to create a complex output. Emphasis on using mathematical/computational modeling to expand/modify insights provided by intuition. Prerequisite: graduate standing. Concurrent with Biological Sciences D155. Same as Biomedical Engineering 213.

233 Topics in Corporate and Translational Research (1) S. Speakers are drawn from biotechnology and pharmaceutical companies and university faculty. Emphasis is on basic and applied research in a corporate environment, and academic research with strong potential for clinical and commercial applications. Satisfactory/Unsatisfactory only. May be repeated for credit.

245 Stem Cell Biology (4) F. The basic characteristics and development roles of embryonic, adult, and cancer stem cells in the human body and in model systems and the use of experimental and genetic methods to analyze and manipulate their properties.

252L Stem Cell Laboratory (4) S. Designed to prepare M.S. Biotechnology program students for a career in stem cell research. Laboratory training utilizes tissue culture, mouse and human embryonic stem cells, and is enhanced with didactic material and discussion. Prerequisites: Molecular Biology and Biochemistry 250L and 251L. Limited to M.S. Biotechnology program students in the Stem Cell emphasis, or consent of instructor.

290A-B-C Colloquium in Developmental and Cell Biology (2-2-2) F, W, S. Colloquium, one and one-half hours. Contemporary research problems. Research students, faculty, and other invited speakers introduce research and review topics.

292A-B-C Scientific Communication (2-2-2) F, W, S. Seminar, two hours. Small group meetings for graduate students to practice scientific writing, debate, and presentation skills. Satisfactory/Unsatisfactory only. May be repeated for credit.

293 Seminar in Interactive Teaching in Biology (2) F. Students receive formal training in use and assessment of interactive teaching strategies in university-level biology classes. Additional aspects of course design and implementation are covered. Recommended for graduate students who have or will be teaching discussion sections. May be taken for credit two times.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory only.

DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY

321 Steinhaus Hall; (949) 824-6006
http://www.bio.uci.edu/
Brandon S. Gaut, **Department Chair**
Stephen G. Weller, **Department Vice Chair**

Faculty

Steven D. Allison: Microbial enzymes, theoretical ecology, and biochemistry
John C. Avise: Molecular evolution and population genetics
Francisco J. Ayala: Evolutionary genetics
Alan Barbour: Molecular pathogenesis and immunology of vector-borne infections
Albert F. Bennett: Environmental and evolutionary physiology of animals
Rudi C. Berkelhamer: Insect ecology and evolutionary biology; teaching methods
Peter A. Bowler: Conservation and restoration biology
Timothy J. Bradley: Comparative physiology of ion transport epithelia
Adriana D. Briscoe: Evolution of sensory systems
Roy J. Britten: The study of repeated DNA sequences in genomes of eukaryotic organisms
Nancy Burley: Behavioral ecology, sexual selection, social organization and communication
Robin M. Bush: Evolution of infectious disease
Diane R. Campbell: Plant-pollinator interactions; evolution of plant reproductive systems
F. Lynn Carpenter: Restoration of tropical forest; tropical plantation forestry
Michael T. Clegg: Plant genetics; population genetics; molecular evolution
Steven A. Frank: Evolutionary genetics, host-parasite interactions
Branden S. Gaut: Phylogenetic analysis; molecular evolution
Michael L. Goulden: Ecosystem ecology, plant physiological ecology, micrometeorology
Steven N. Handel: Urban restoration ecology
Bradford A. Hawkins: Insect population and community ecology
James W. Hicks: Comparative physiology of circulation and gas exchange; activity physiology
Bradley S. Hughes: Experimental evolution, coastal ecology, and science education
Mahtab Jafari: Anti-aging effects of botanicals and pharmaceutical compounds; the impact of botanical extracts on mitochondrial bioenergetics, oxidative stress, and other pathways of aging using cell culture and Drosophila
C. Sunny Jiang: Water pollution microbiology, environmental biotechnology, aquatic microbial ecology
Natalia L. Komarova: Mathematical biology, biophysics, evolution of language, models of cancer and viruses
Anthony D. Long: Quantitatiave and population genetics
Catherine Loudon: Biomechanics and insect physiology
Adam C. Martiny: Microbial ecology, genomics, and physiology
Jennifer Martiny: Microbial ecology and biodiversity
Matthew J. McHenry: Hydrodynamics and mechanoreception of aquatic animals
Kailen A. Mooney: Community ecology, evolutionary ecology, plant-insect interactions
Laurence D. Mueller: Theoretical and empirical studies of density-dependent natural selection
R. Michael Mulligan: RNA editing in plant mitochondria and chloroplasts
Diane E. Pataki: Plant physiological ecology; ecosystems ecology, global change
James T. Randerson: Global carbon and nutrient cycles, fires, atmospheric trace gases, and biosphere-atmosphere interactions
Jose M. Ranz: Comparative genomics and evolution of the expression network
Robert D. Reed: Evolution and development; butterfly wing patterns
Michael R. Rose: Evolution of life histories and genetic systems
Ann K. Sakai: Plant population biology; evolution of plant reproductive systems
Georg Striedter: Evolutionary developmental neurobiology
Noboru Sueoka: Compositional genomics and evolution
Richard Symanski: Conservation biology
Kevin Thornton: Comparative genomics and population genetics
Kathleen K. Treseder: Ecosystem ecology, global change biology, and microbial biogeochemistry
Douglas C. Wallace: Evolutionary biology; genetics; mitochondrial medicine; anthropology
Stephen G. Weller: Plant population biology; evolutionary genetics of plant reproductive systems
Dominik Wodarz: Theoretical biology of cancer, infectious diseases, and immunology
Guiyan Yan: Ecology and genetics of malaria

Ecology and evolutionary biology deals with the establishment of adaptations over evolutionary time and with the organismal function in ecological time. Faculty in the Department of Ecology and Evolutionary Biology study questions pertinent at a variety of levels of biological organization, from molecular aspects of evolution, to organismal structure and performance, to the ecology of ocean ecosystems. Research is conducted in both the laboratory and field and includes work on a variety of organisms from phage and bacteria, to higher plants and animals. Primary attention is given to evolutionary, ecological, and functional questions rather than to particular habitats or taxa. Faculty and graduate student research is often collaborative and interdisciplinary in approach. Departmental research activities include physiological ecology energetics, plant-herbivore and plant-pollinator interactions, microbial ecology and coevolution, quantitative genetics, life history evolution, population and reproductive ecology, and community ecology. These research endeavors provide a balance between empirical and theoretical approaches to evolutionary, organismal, and ecological problems.

The graduate program offers both the Plan I M.S. and the Ph.D. in Biological Sciences. A basic course sequence consisting of

Ecology and Evolutionary Biology 204, 205, 206, 207, and 208 is recommended for most entering students during their first year. At the end of the first year, students complete an examination based upon three of these courses (205, 206, and 208) and other materials the Department might require. Satisfactory performance on this Comprehensive Examination is required for continuation in the graduate program.

Each entering graduate student chooses a faculty advisor and a three-person advisory committee for guidance, with whom the student meets at least twice each year. All students are encouraged to submit a research proposal to their advisory committee during their first year of residency. A comprehensive proposal is required before the end of the second year. The progress of each student is reviewed by the student's advisory committee, together with the graduate advisor, once each academic year.

The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years. All requirements for the M.S. degree should be completed within two years, with a maximum of three years allowed for completion of the program. Advancement to doctoral candidacy by an oral examination is expected during the third year for students entering with a B.A. or B.S. or during the second year for those entering with an M.A. or M.S. Applicants for this program should have a solid undergraduate program in biology and ecology, emphasizing both research and field work. In addition, course work in statistics, mathematics, and physical and chemical sciences is expected. All applicants are required to submit aptitude and advanced biology GRE scores. The deadline for application is January 15.

Courses in Ecology and Evolutionary Biology

(Schedule of Classes **designation: Eco Evo)**

200A-B-C Research in Ecology and Evolutionary Biology (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor.

201 Seminar in Ecology and Evolutionary Biology (2) F, W, S. Invited speakers, graduate students, and faculty present current research in ecology and evolutionary biology. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing. May be repeated for credit.

203A-B-C Graduate Tutorial in Ecology and Evolutionary Biology (2 to 12 per quarter) F, W, S. Advanced study in areas not represented by formal courses. May involve individual or small group study through reading, discussion, and composition. Prerequisite: consent of instructor.

204 Writing Grant Proposals (4) S. Provides students with hands-on experience writing proposals in the research areas of ecology, evolution, or physiology. Prerequisite: graduate standing or consent of instructor.

205 Special Topics in Ecology (4) F. Lecture, four hours. Survey of special topics in ecology. Prerequisite: graduate standing.

206 Special Topics in Evolution (4) S. Lecture, four hours. Extensive introduction to the primary literature of evolutionary biology. Topics include population genetics, quantitative genetics, neutralism, molecular evolution, evolution of genetic systems, genetic architecture of fitness, speciation, and macroevolution. Prerequisite: graduate standing.

207 Quantitative Methods in Ecology and Evolutionary Biology (4) W. Lecture, four hours. Statistics for ecologists and evolutionary biologists. Emphasis on specific applications and underlying assumptions rather than on methods of calculation. Topics include experimental design, parametric and nonparametric methods, analysis of variance and covariance, and multiple regression. Prerequisites: at least one quarter of statistics, including regression and analysis of variance; graduate standing.

208 Ecological and Evolutionary Physiology (4) F. Seminar, four hours. A summary of information in organismal biology, comparative and ecological physiology, and the biophysical basis of organismal function. Prerequisite: graduate standing or consent of instructor.

NOTE: Enrollment in the following courses (210–285) may be approved for undergraduate students with advanced standing.

210A-B-C Foundations of Physiology (4-4-4) F, W, S. Lecture and discussion, four to eight hours. Physical and functional principles common to many living forms. Course forms a basis for subsequent specialization in any of the subdisciplines of physiology. May be repeated for credit. Satisfactory/Unsatisfactory only.

218 Advanced Topics in Evolutionary Biology (4) F, S. Seminar, three hours. Content and instructor will vary from quarter to quarter. Possible topics include quantitative genetics, experimental methods of evolutionary studies, mathematical modeling in evolutionary studies, and the evolution of genetic systems. Prerequisite: consent of instructor.

219 Advanced Topics in Ecological Genetics (4) W. Seminar, three hours. Content and instructor will vary from year to year. Possible topics include coevolution, sex-ratio evolution, evolution senescence, plant population biology, and density-dependent selection. Prerequisite: consent of instructor.

221 Advanced Topics in Ecology (2 to 4) F, W, S. Weekly discussion of current topics in ecology at the graduate level. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

225 Global Biological Change (4) F. Lecture, two hours; field work, one hour. An investigation of the mechanisms that underlie responses of organisms to human-caused environmental changes. Activities include field trips, literature discussions, and lectures. Focuses on issues of interest in Southern California, including nitrogen deposition, invasions, and habitat fragmentation. Same as Earth System Science 260.

228 Seminar in Conservation Biology (2) F, W. Devoted to the application of basic ecological principles to the understanding and resolution of environmental problems of both local and global natures. Current problems approached through a combination of readings, group discussions, and visiting speakers. Prerequisite: graduate standing or consent of instructor.

230 Topics in Microbial Ecology (2 to 4) F, W, S. Weekly discussion of current topics in ecology, biogeochemistry, evolution, and physiology of microbial organisms. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

251 Population Dynamics in Ecology, Epidemiology, and Medicine (4) S. Lecture, three hours. Explore the dynamics of populations on an ecological, epidemiological, and medical level. Considers the dynamics of competition, predation, and parasitism; the spread and control of infectious diseases; and the *in vivo* dynamics of viral infections and the immune system. Prerequisite: graduate standing. Concurrent with Biological Sciences E151.

253 Functional and Structural Evolutionary Genomics (4) W. Lecture and computer lab, four hours. Function and organization of genomes analyzed from an evolutionary perspective. Review of some of the most recent experimental approaches in genome analysis and comparative genomics. Relevant software to analyze DNA and expression data is used. Concurrent with Biological Sciences E153.

260 Ornithology (4). Lecture, three hours. A thorough introduction to the biology of birds, covering topics ranging from avian anatomy and physiology to behavior, natural history, ecology, genetics, evolution, systematics, and conservation. Examples from both local and global avifauna. Concurrent with Biological Sciences E160.

263 Terrestrial Ecology (2) S. A mechanistic perspective of the structure and functioning of terrestrial ecosystems. Includes the processes that control plant growth and community structure, nutrient cycling, and role of ecosystem dynamics in local and global biogeochemical cycling. Same as Earth System Science 263.

272 Systematics and Evolution of Flowering Plants (4) S of even years. Lecture, three hours. Basic systematic concepts including phylogenetic analysis, introduction to major groups of flowering plants, analysis of evolutionary significance of characters used in systematic studies. Students carry out a phylogenetic analysis using appropriate software. Concurrent with Biological Sciences E172.

273 Plant Systematics Laboratory (4) S. Laboratory, three hours. Diversity of flowering plants is investigated in the laboratory and field. Familiarity with flowering plant families, particularly those prominent in the California flora, is emphasized. Concurrent with Biological Sciences E172L.

275 Coastal Ecosystem Health (4) F. Seminar, three hours. Examines the causes of coastal ecosystem degradation and strategies to restore the ecosystem balance or prevent further coastal ecosystem health degradation. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E205 and Public Health PH260.

285 Topics in Evolutionary Genetics (2). Discussion, one to two hours. Weekly discussion of recent research on evolutionary genetics. Prerequisites: graduate standing and consent of instructor.

324 Curriculum and Methods for Elementary School Science (4). Lecture, three hours. Prospective elementary teachers learn how to teach science in grades K–8. Covers State science requirements, a variety of teaching methods, criteria for selecting science curricular materials, and how to plan science lessons, units, experiments, projects, and demonstrations. Limited to students in the Teacher Credential Program. Same as Education 323.

341 Teaching Science in Secondary School (4). Prospective secondary science teachers learn how to teach science in grades 7–12. Covers State science requirements, a variety of teaching methods, criteria for selecting science curricular materials, and how to plan science lessons, units, experiments, projects, and demonstrations. Limited to students accepted into the Teacher Credential Program. Same as Education 341.

344 Applied Instructional Strategies in Secondary School Sciences (4). Application of pedagogy and research to practice science teaching experiences in the secondary schools. A continuation of the Education 340 series with an emphasis on the needs of students with culturally diverse backgrounds. Limited to students accepted into the Teacher Credential Program. May be taken twice for credit. Same as Education 344.

398 Teaching Assistant Seminar (2) W. Seminar, two hours. Readings, lectures, workshops, and student presentations designed to help develop teaching skills of graduate students teaching university-level biology classes. Topics vary and may include: course organization, presentation styles, exam design, grading, motivating students, and commonly encountered problems. May be repeated for credit as topics vary.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF MOLECULAR BIOLOGY AND BIOCHEMISTRY

3205 McGaugh Hall; (949) 824-4915
Christopher C.W. Hughes, **Department Chair**
Donald F. Senear, **Department Vice Chair**

Faculty

Dana W. Aswad: Regulation of protein function by covalent modification
Hans-Ulrich Bernard: Papillomavirus/cancer
Michael J. Buchmeier: Molecular biology and pathogenesis of emerging viruses
Paolo Casali: Human immune response to cancer and viral diseases
Melanie Cocco: Structural studies of proteins and DNA using NMR spectroscopy
Michael G. Cumsky: Mitochondrial protein import; regulation of gene expression in yeast
Rowland H. Davis *(Emeritus)*: Regulation of polyamine metabolism in *Neurospora crassa*
Hung Fan: Molecular biology and pathogenesis of mouse and human retroviruses
David A. Fruman: Signal transduction, immunology, cancer, leukemia, kinase, microarray
Paul Gershon: mRNA transcription and modification
Charles G. Glabe: Amyloid Aβ peptide in Alzheimer's pathogenesis; gamete recognition
Celia Goulding: Utilizing proteomic and crystallographic techniques to elucidate and characterize novel systems of protein complexes in *Mycobacterium tuberculosis*
Gale A. Granger *(Emeritus)*: Immunology and pathogenesis: Cell-mediated immunity; tumor immunology; cytokine action
Barbara A. Hamkalo *(Emerita)*: Molecular basis of differential chromatin condensation
Agnes Henschen-Edman *(Emerita)*: Protein structure, function, post-translational modification; fibrinogen
Christopher C.W. Hughes: Endothelial cells as initiators and targets of immune responses
Anthony A. James: Malaria parasite development; genetic manipulation of insect vectors
Thomas E. Lane: Molecular/immuno-pathogenic mechanisms of virus-induced demyelinating disease
Melissa Lodoen: Host-pathogen interaction, immune evasion, and parasite immunology
Hartmut Luecke: Structure-function studies of membrane-associated proteins
Rui (Ray) Luo: Protein structure and noncovalent associations involving proteins
Andrej Luptak *(Joint)*: RNA biology and chemistry
Jerry E. Manning *(Emeritus)*: Major surface proteins and their genes in *Trypanosoma cruzi*
Rachel W. Martin *(Joint)*: Solid-state NMK methods development, protein structure determination, biophysical chemistry, physical chemistry
Alexander McPherson: X-ray and atomic force microscopy analysis of protein, nucleic acid, and virus crystals; structural immunology, structural virology; microgravity research on macromolecular crystal growth
Naomi Morrissette: Genetic, cell biological, and structure-function studies of tubulin and microtubules in *Apicomplexan* parasites
Edward Nelson *(Joint)*: Tumor immunology
Timothy F. Osborne: Transcriptional regulation of cholesterol biosynthesis
Thomas L. Poulos: Protein engineering and crystallography
Rainer K. Reinscheid *(Joint)*: Molecular pharmacology, G Protein-coupled receptors, GPCRs
Markus Ribbe: Fundamental biochemical processes in microbial systems
Ingrid Ruf: Mechanisms of viral oncogenesis, maintenance of viral latency and regulation of gene expression
Donald F. Senear: Interactions of proteins and DNA in transcriptional regulation
Andrea J. Tenner: Molecular basis of the enrichment of human leukocyte function
Krishna K. Tewari *(Emeritus)*: Chloroplast DNA: replication and transcription
Shiou-Chuan (Sheryl) Tsai: Structural and chemical biology of multisubunit enzyme complexes that make pharmaceutically important natural products
Luis P. Villarreal: Tissue-specific viral and cellular gene expression; viral vectors
Craig M. Walsh: T cell function, development, and homeostasis
Gregory A. Weiss *(Joint)*: Bioorganic chemistry, chemical biology, protein engineering, molecular biology and biochemistry
Clifford A. Woolfolk *(Emeritus)*: General microbiology; enzymology

The research interests of faculty in the Department of Molecular Biology and Biochemistry include structure and synthesis of nucleic acids and proteins, regulation, virology, biochemical genetics, gene organization, nucleic acids and proteins, cell and developmental biology, molecular genetics, biomedical genetics, and immunology.

The Department offers graduate study in conjunction with the program in Cellular and Molecular Biosciences (CMB), which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year. Participation in an advanced topics seminar series and completion of at least one course per year for three years are expected of all students. Students must advance to candidacy in their third year. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Graduate Gateway Program in Medicinal Chemistry and Pharmacology (MCP). The one-year MCP graduate gateway program is designed to function in concert with selected graduate programs, including the Ph.D. in Biological Sciences. Detailed information is available in the Department of Pharmaceutical Sciences section on page 529, and online at http://www.cohs.uci.edu/pharm.shtml.

Courses in Molecular Biology and Biochemistry

***(Schedule of Classes* designation: Mol Bio)**

200A-B-C Research in Molecular Biology and Biochemistry (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. See areas of interest listed under Faculty. Prerequisite: consent of instructor.

200R Research in Molecular Biology and Biochemistry for First-Year Students (2 to 12) F, W, S. Independent research within the laboratories of graduate training faculty in the Department of Molecular Biology and Biochemistry for first-year Ph.D. students. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be taken for credit three times.

201A-B-C Seminars in Molecular Biology and Biochemistry (2-2-2) F, W, S. Seminar, two hours. Presentation of research from department laboratories or, when pertinent, of other recent developments. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

202A-B-C Tutorial in Molecular Biology and Biochemistry (2-2-2) F, W, S. Tutorials in the area of research of a particular professor which relate current research to the literature. May be conducted as journal clubs. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

203 Nucleic Acid Structure and Function (4) W. Lecture, three hours. Structure and chemistry of nucleic acids. Relationship between these properties and the mechanisms of fundamental processes such as replication and repair, RNA-mediated catalysis, formation and regulation of higher order chromatin structure and recombination. Prerequisites: Biological Sciences 98 and 99 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinator, D. Senear)

204 Protein Structure and Function (4) F. Lecture, three hours. The structure and properties of proteins, enzymes, and their kinetic properties. Prerequisites: Biological Sciences 98 and 99 or the equivalent and Chemistry 51C or the equivalent. (Coordinator, D. Aswad)

205 Topics in Viral Gene Expression (4) W. Lecture, three hours. Primary research data on the major DNA and RNA viruses emphasizing strategies of regulation of gene expression. Utilization of viruses as molecular biological tools. Graduate-level knowledge of the biochemistry and molecular biology of macromolecules is required. Prerequisites: Molecular Biology 203 and 204 or the equivalent. (Coordinator, B. Semler)

206 Regulation of Gene Expression (4) W. Lecture, three hours. Aspects of gene expression including the organization of the eukaryotic nucleus in terms of protein-nucleic acid interaction (i.e., chromatin and chromosome structure); comparisons between prokaryotic and eukaryotic gene expression, the enzymology and regulation of RNA transcription in *E. Coli* and other prokaryotes. Enzymology of transcription in eukaryotes. Same as Microbiology and Molecular Genetics 206. (Coordinator, R. Sandri-Goldin)

210A-B Basic Medical Biochemistry (10-10) F, W. Lecture, ten hours. Classical and molecular biochemistry, including structure, function, and biosynthesis of macromolecules; metabolic interrelations and control mechanisms; and biochemical genetics. Application of recent advances in knowledge of molecular bases for cellular function to disease states (diagnosis, prevention, and treatment). Prerequisite: consent of instructor.

211 High-Resolution Structures: NMR and X-ray (4) F. Lecture, three hours. Basic principles of magnetic resonance and x-ray crystallography toward the determination of high-resolution biomolecular structures. Prerequisites: Mathematics 2B and consent of instructor. Concurrent with Biological Sciences M133.

213 Literature in Nucleic Acid Structure and Function (2). Seminar and discussion, two hours. Exploration and critical analysis of recent primary scientific literature in structure, properties, and biological mechanisms involving nucleic acids. Corequisite: Molecular Biology and Biochemistry 203. Prerequisite: consent of instructor. (Coordinator, D. Senear)

214 Literature in Protein Structure and Function (2). Seminar and discussion, two hours. Exploration and critical analysis of recent primary scientific literature in structure and properties of proteins, enzymes, and their kinetic properties. Corequisite: Molecular Biology and Biochemistry 204. Prerequisite: consent of instructor. (Coordinator, D. Aswad)

215 Integrative Immunology (4). Lecture and discussion, four hours. Lectures and student presentations of primary literature. The main goal is to achieve a basic understanding of the cellular and molecular basis of innate and adaptive immunity, and how immune function is coordinated at a systems level. Same as Microbiology and Molecular Genetics 215.

217A Principles of Cancer Biology I (4) W of even years. Lecture, three hours. Oncogenes and tumor suppressor genes are studied from molecular viewpoints. Also studies their role in cancer; viral carcinogenesis. Designed for graduate students interested in cancer research. Format includes lectures and student-led discussions. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

217B Principles of Cancer Biology II (4) W of odd years. Lecture, three hours. Topics include cancer cell growth and metastasis, chemical carcinogenesis, and cancer genetics and epidemiology. Designed for graduate students interested in cancer research. Format includes lectures and student-led discussions. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

218 Clinical Cancer (3) F of even years. Lecture, two hours. Designed to acquaint students in basic life science with clinical cancer. Restricted to graduate and postdoctoral students. May be repeated for credit. (Coordinator, H. Fan)

221 Advanced Topics in Immunology (4). S. Lecture, one-half hour; discussion, two and one-half hours. Literature-based, interactive discussions focused on review of seminal historic and recent immunology literature. Student responsibilities include reading, critical evaluation, and discussion of manuscripts. Concurrent with Biological Sciences M119.

221L Advanced Immunology Laboratory (4) S. Laboratory, four hours. An advanced course in immunology for graduate students enrolled in the Biotechnology master's program. Emphasis is placed on learning modern techniques in immunology such as ELISAs, western blotting, immunofluorescent staining assays. Prerequisite: graduate standing. Concurrent with Biological Sciences M121L.

223 Introduction to Computational Biology (4) S. Lecture, three hours; laboratory, two hours. The use of theories and methods based on computer science, mathematics, and physics in molecular biology and biochemistry. Basics in biomolecular modeling. Analysis of sequence and structural data of biomolecules. Analysis of biomolecular functions. Concurrent with Biological Sciences M123 and Computer Science 183.

224 Virus Engineering Laboratory (4) S. Laboratory, four hours. An advanced laboratory for graduate students enrolled in the Biotechnology master's program. Students learn to engineer recombinant eukuryotic viruses and express genes in mouse tissue. Prerequisite: graduate standing.

227 Immunology Journal Club (2) F, W, S. Seminar and discussion, one hour. Advanced topics in immunology as related to an understanding of human disease. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

227L Virology and Immunology Laboratory (5) S. Laboratory, four hours; lecture, one hour. Introductory laboratory course in virology and immunology designed for Biological Sciences graduate students. Curriculum includes plasmid preparation, plasmid characterization, microscopy, cell culture, transfection and infection of cells, cell counting, plaque assays, ELISA, Western blot, mixed lymphocyte reactions. Prerequisite: graduate standing.

228 Genetic Engineering and Biotechnology (4) S. An advanced course in genetic engineering and biotechnology for graduate students enrolled in the Biotechnology master's program. Emphasis is placed on learning advanced methods in assembling the gene for expression in bacteria, yeast, and human cells.

229 Research-in-Progress Seminars (1) F, W, S. Seminar and discussion, one hour. Two half-hour presentations by graduate students and postdoctorals to the department on their current research projects. Satisfactory/Unsatisfactory only. May be taken for credit 15 times.

250 Advanced Topics in Biotechnology–Nucleic Acids (2) F. Lecture, two hours. Taken concurrently with 250L, supplements laboratory curriculum with scientific background behind experimental methods. Format consists of lectures and the presentation and analysis of relevant papers from the scientific literature. Corequisite: Molecular Biology and Biochemistry 250L. Limited to Biotechnology concentration M.S. students or consent of instructor.

250L Biotechnology Laboratory–Nucleic Acids (8) F. Laboratory, eight hours. Nucleic acid techniques and recombinant DNA technology. Extraction and purification of nucleic acids, cloning and subcloning, PCR, site-directed mutagenesis, nucleic acid hybridization, additional associated procedures. Students must demonstrate accurate documentation of data (laboratory notebook) detailing experience and results. Corequisite: Molecular Biology and Biochemistry 250. Limited to Biotechnology concentration M.S. students or consent of instructor.

251 Advanced Topics in Biotechnology–Protein Purification and Characterization (2) W. Lecture, two hours. Taken concurrently with 251L, supplements laboratory curriculum with scientific background behind experimental methods. Format consists of lectures and the presentation and analysis of relevant papers from the scientific literature. Corequisite: Molecular Biology and Biochemistry 251L. Prerequisites: Molecular Biology and Biotechnology 250 and 250L. Limited to Biotechnology concentration M.S. students or consent of instructor.

251L Biotechnology Laboratory–Protein Purification and Characterization (8) W. Laboratory, eight hours. Major techniques of handling proteins and antibodies. Protein engineering, expression and large-scale purification of recombinant proteins from bacteria, HPLC, antibody purification, western

blotting, additional associated procedures. Students must demonstrate accurate documentation of data (laboratory notebook) detailing experience and results. Corequisite: Molecular Biology and Biochemistry 251. Prerequisites: Molecular Biology and Biotechnology 250 and 250L. Limited to Biotechnology concentration M.S. students or consent of instructor.

255 Structure-Function Relationships of Integral Membrane Proteins (4) W. Lecture, three hours. Integral membrane proteins such as voltage and ligand-gated ion channels, water channels, pumps, cotransporters, and receptors (e.g., GPCRs). The emphasis is on the relationship between atomic structure and the functional properties of these proteins. Prerequisites: a grade of B or better in Biological Sciences 98 and 99. Concurrent with Biological Sciences M160.

292A-B-C Scientific Communication (2-2-2) F, W, S. Seminar, two hours. Small group meetings for graduate students to practice scientific writing, debate, and presentation skills. Satisfactory/Unsatisfactory only. May be repeated for credit.

293A, B, C Cancer Biology Journal Club (1, 1, 1) F, W, S. Seminar, one hour. Focuses on molecular mechanisms that underlie the development and progression of cancers. Covers a variety of cancer-related research areas, such as cell cycle control, apoptosis, DNA repair, metastasis, angiogenesis, and others. Satisfactory/Unsatisfactory only. Formerly Biological Chemistry 293A, B, C.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF NEUROBIOLOGY AND BEHAVIOR

2205 McGaugh Hall; (949) 824-8519
Thomas J. Carew, **Department Chair**
Ron Frostig, **Department Vice Chair**

Faculty

Jorge Busciglio: Cellular and molecular mechanisms of neuronal degeneration in Down's syndrome and Alzheimer's disease
Lawrence F. Cahill: Brain mechanisms of emotion and memory
Thomas J. Carew: Cellular and molecular mechanisms of memory
Susana Cohen-Cory: Nervous system development; development of synaptic connectivity, neurotrophic factors, *in vivo* imaging
Carl Cotman: Brain aging, Alzheimer's, cell biology, biochemistry
Karina S. Cramer: Mechanisms of nervous system development; axonal target selection; development of auditory brainstem pathways
Norbert Fortin: Fundamental neurobiological mechanisms underlying episodic memory
Ron D. Frostig: Functional organization of cortex
Christine M. Gall: Regulation of neuronal gene expression
John F. Guzowski: Experience-dependent gene expression in the modification of neural circuits involved in long-term memory formation
Robert K. Josephson: Design of skeletal muscle
Claudia H. Kawas: Clinical neurology
Herbert P. Killackey: Developmental neuroanatomy
Frank LaFerla: Alzheimer's, neural apoptosis, transgenic animal modeling
Michael Leon: Brain development
John Marshall: Neuropharmacological approaches to behavioral analysis
James L. McGaugh: Neurobiology of learning and memory
Raju Metherate: Synaptic physiology and plasticity in sensory neuroprocesses
Ricardo Miledi: Molecular neurobiology and physiology of ion channels and receptors
Ian Parker: Intracellular calcium and cell signaling
Michael D. Rugg: Cognitive and neural bases of human memory
Iván Soltesz: Molecular and cellular neurobiology
George Sperling: Cognition, vision, and visual perception
Craig Stark: Memory, hippocampus, neuroimaging, amnesia, FMRI
Arnold Starr: Cognitive and sensory neuroprocesses
Oswald Steward: Mechanisms of synapse growth and plasticity
Georg Striedter: Neuroethology, behavioral neuroscience, evolutionary neurobiology
Katumi Sumikawa: Molecular neurobiology of synapses
Andrea J. Tenner: Molecular basis of the enrichment of human leukocyte function
Leslie Michels Thompson: Molecular/biochemical analysis of skeletal dysplasias and Huntington's disease
Norman M. Weinberger: Neural bases of attention and learning
Marcelo Wood: Neurobiology and memory
Pauline Yahr: Behavioral neuroendocrinology

Neurobiology and Behavior is concerned with the biology of the nervous system and behavior. The Department of Neurobiology and Behavior emphasizes the adaptive aspects of neural and behavioral plasticity. The faculty's research interests include the biochemical, endocrinological, genetic, and experiential determinants of nervous system function and behavior. Focal topics include synaptic processes, neurophysiology, neuroendocrinology, neuroanatomy, molecular neurobiology, neuropharmacology, theoretical neurobiology, arousal and attention, learning and memory, reproductive behavior, and communication. The importance of developmental and comparative approaches to these problems is stressed. The Department also participates in the Interdepartmental Neuroscience Program, described in a previous section.

The Department of Neurobiology and Behavior offers the Ph.D. degree in Biological Sciences. Graduate students must complete a sequence of core courses (lectures and laboratories) during their first year, and maintain an overall GPA of 3.3 or better. They also must take a minimum of four advanced courses before graduation and participate in directed research each year and teaching during their first, second, third, and fourth years. Students will advance to candidacy for the Ph.D. at the end of their third year by means of a written critical review of the literature in the area in which they plan to do their dissertation, a research proposal, and an oral examination. Graduation depends on successful preparation and oral defense of a dissertation based on the student's research. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Ideally, applicants for this program should have taken undergraduate courses in biology (one introductory year plus some advanced work), psychology (experimental, physiological, and learning), chemistry through biochemistry, introductory physics, calculus, and statistics. They also must submit GRE Aptitude test scores. Because graduate training emphasizes research, preference is given to applicants having laboratory research experience as undergraduates. Applicants with substantial outside commitments that would curtail laboratory research or prolong the time to degree are not accepted. The deadline for application is January 3.

Courses in Neurobiology and Behavior

***(Schedule of Classes* designation: Neurbio)**

200A-B-C Research in Neurobiology and Behavior (2 to 12 per quarter) F, W, S. Individual research supervised by a specific professor. Prerequisite: consent of instructor.

201A-B-C Research in Neurobiology and Behavior (2 to 12 per quarter) F, W, S. Individual research supervised by a specific professor. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only.

202A, B, C Foundations of Neuroscience (2, 2, 2). Intended to expose students to critical reading and analysis of the primary neuroscience literature. Instructors from departments associated with the Interdepartmental Neuroscience Program participate and discuss topics of current interest. Satisfactory/Unsatisfactory only.

206 Molecular Neuroscience (5) F. Surveys molecular and cellular mechanisms involved in neuronal function, including control of gene expression, post-transcriptional and post-translational processing, RNA and protein targeting, cell death mechanisms, and the molecular genetic basis of neurological disorders. Overview of the molecular aspects of developmental neurobiology. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice.

207 Cellular Neuroscience (5) W. Neurophysiological and neurochemical mechanisms of electrical and chemical signaling in neurons. Topics include generation of resting- and action-potentials, voltage- and ligand-gated ion channels, second messenger systems, and synaptic transmission and integration. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice.

207L Cellular Neuroscience Laboratory (2) W. Intensive hands-on laboratory experience of contemporary techniques for studying ion channels and synaptic function. Experiments include microelectrode recording, patch clamp, quantal analysis of synaptic transmission, heterologous expression of genes for channels and receptors, brain slice, and fluorescence calcium imaging. Satisfactory/Unsatisfactory only. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice.

208A-B Systems Neuroscience (5-5) F, W. Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 210A-B.

209 Behavioral Neuroscience (5) S. Overview of fundamental conceptual and experimental issues in behavioral neuroscience, emphasizing behavioral endocrinology, aggression, emotion, the neurobiology of learning and memory, and addiction. The approach is a cross-level integration of research in molecular-genetic, cellular, circuit, systems, and behavioral analyses. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice.

235 Balancing Research and Teaching (1). The goal of this course is to offer graduate students who have commitments outside of their research program (such as teaching) an opportunity to learn to balance these commitments.

237 Neurobiology of Brain Aging (4). Lecture, three hours. Outlines some of the significant changes that occur in the aging brain, with a special emphasis on risk factors and protective strategies that promote successful brain aging. Topics include changes in synaptic plasticity, neurotrophic factors, and molecular mechanisms in aging. Prerequisite: Neurobiology and Behavior 209.

238 Neurobiology of Memory as a Multidisciplinary Science (4). Lecture, three hours. The study of memory is a highly multidisciplinary science filled with challenges. The focus of this course is to integrate across approaches and levels of analysis to better understand how the hippocampus, and its constituent elements, subserves memory. Prerequisite: Neurobiology and Behavior graduate students only.

239 Functional Imaging of the Nervous System (4). Lecture, three hours. Overview of technical and applied aspects of imaging techniques available for studying the nervous system. The areas emphasized are cellular and subcellular imaging of neural function, systems-level imaging of brain function, and imaging of the human brain. Prerequisite: Neurobiology and Behavior graduate students only.

240 Advanced Analysis of Learning and Memory (4). Lecture and seminar, three hours. Advanced analysis of contemporary research concerning the nature and neurobiological bases of learning and memory. Special emphasis is given to time-dependent processes involved in memory storage. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

244 Cognitive Neuroscience of Human Memory (4). Lecture, three hours. In-depth treatment of current topics of interest in the cognitive neuroscience of human long-term memory. Topics include methods of investigation of human memory, functional architecture of memory, implicit vs. explicit distinction, and control processes in memory, among others. Prerequisite: Neurobiology and Behavior 209.

245 Advanced Topics in the Neurobiology of Aging (4). Lecture and seminar, three hours. Covers the major topics and rapidly advancing areas in the molecular and cellular events leading to brain aging and dementia. Lectures are presented by investigators active in the fields of aging and neurodegeneration. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

248 Topics in Neurobiology and Behavior (4). Studies in selected areas of neurobiology and behavior. May be taken for credit three times.

249 Electronics for Biologists (4). Lecture, three hours; laboratory, four hours. Basic principles of electricity; properties and use of discrete components and integrated circuits; circuit analysis and design. Intended for advanced students in the life sciences. Same as Physiology and Biophysics 205.

250 Basal Ganglia and Movement Disorders (4). Lecture and seminar, three hours. Principles underlying the organization and functions of the basal ganglia and amygdala are considered. The circuitry, neurotransmitters, and influences on cortex and brainstem motor regions are discussed. Clinical disorders of the basal ganglia, including parkinsonism and ballism, are included. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

254 Molecular Neurobiology (4). Lecture and seminar, three hours. The application of genetic and recombinant DNA technology to neurobiology. Topics include the study of neuronal proteins which play important roles in the formation of synapses and synaptic transmission. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

255 History of Neuroscience (4). An overview of the conceptual and technical foundations of contemporary neuroscience from ancient times to the present. The subjects include synapses, neurons, brain organization, sensory, motor and regulatory systems, learning and memory, human brain function and dysfunction. Concurrent with Biological Sciences N119. May be taken twice for credit.

257 Statistics for Neurobiologists (4). Introduction to common methods for statistical analysis used in neurobiology. Topics covered include t-tests, ANOVAs, correlations and regressions, general linear model, power analysis, and non-parametric tests. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

258 Advanced Analysis of Neurogenetics (4). Lecture and seminar, three hours. Analysis of the genetic basis of neurological development and disorders. Emphasis on the approaches used to identify novel, neurologically relevant genes and analysis on the molecular level. Focuses on understanding how genetic changes alter cellular functions and the clinical consequences that ensue. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

260 Auditory Neuroscience (4). Lecture, three hours. Multidisciplinary overview of brain mechanisms of hearing. Emphasizes breadth of auditory function and research: single neurons to psychoacoustics, the cochlea to the cortex, and basic science to clinic.

261 Advanced Topics in Neurodegeneration (4). Lecture, three hours. Neurodegenerative disorders represent one of the most devastating illnesses to afflict humans, and usually occur in an age-dependent fashion. Course reviews the basic mechanisms that underlie cognitive and motor dysfunction in the major disorders of the brain. Prerequisite: Neurobiology and Behavior 206.

265 Developmental Neurobiology—Wiring the Brain (4). Lecture and discussion, three hours. The development of the nervous system is discussed with particular emphasis on the processes that underlie the appearance of complex and highly ordered neural circuits. Topics include neuronal migration, axon guidance, and formation and maintenance of synaptic connections.

267 Seminar in Neurobiology and Behavior (1.3). Open only to Neurobiology and Behavior graduate students. May be repeated for credit.

290 Colloquium in Neurobiology and Behavior (1.3) F, W, S

292 Scientific Communication (4). Lecture and discussion, three hours. Students learn how to effectively communicate scientific ideas and results. Activities include learning how to effectively write a scientific manuscript, how to perform a coherent slide presentation, and how to run-through a poster presentation. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor.

397 Learning to Teach Neurobiology (4). Students learn to teach neurobiology, both in concept and in practice. Open only to Neurobiology and Behavior graduate students. Pass/Not Pass only.

398 Learning to Mentor Neurobiology (1 to 4). Students learn to teach neurobiology, both in concept and in practice. Open only to Neurobiology and Behavior graduate students. Pass/Not Pass only. May be repeated for credit.

399 University Teaching (1 to 4) F, W, S. Limited to Teaching Assistants. May be repeated for credit.

400E Spinal Cord Injury Research Techniques (4) Summer. Intensive four-week training course in experimental approaches to spinal cord injury. Laboratory techniques cover pathophysiology, experimental models used, and accepted outcome measures (both functional and anatomical). Lectures and seminars by invited speakers and distinguished scholars-in-residence. Prerequisites: Neurobiology and Behavior graduate student and consent of instructor. Satisfactory/Unsatisfactory only. Same as Anatomy and Neurobiology 400E.

DEPARTMENT OF ANATOMY AND NEUROBIOLOGY

364 Medical Surge II; (949) 824-6050
anatomy@uci.edu; http://www.ucihs.uci.edu/anatomy/index.html
Ivan Soltesz, **Department Chair**

Faculty

Aileen J. Anderson: Mechanisms of neurodegeneration and inflammation after central nervous system injury
Tallie Z. Baram: Developmental neurobiology of excitation and excitotoxicity; CNS mechanisms of stress response
Robert H. Blanks *(Emeritus)*: Vestibular physiology and anatomy
Anne L. Calof: Developmental neurobiology; molecular mechanisms of neurogenesis and programmed cell death
Steven C. Cramer: Mapping and treating neurorecovery in humans
Brian Cummings: Spinal cord injury and repairs; neurobiology of stem cells
James H. Fallon *(Emeritus)*: Human and molecular brain imaging, growth factors and adult stem cells in injured brain
Mark Fisher: Mechanisms of stroke
Christine M. Gall: Regulation of neuronal gene expression; neurotropic factors
Roland A. Giolli *(Emeritus)*: Experimental neuroanatomy; visual system
Alan L. Goldin: Ion channels and CNS disease
Ranjan Gupta: Peripheral nerve injury
Hans S. Keirstead: Axon and myelin regeneration following spinal cord injury
Herbert P. Killackey: Developmental neuroanatomy; somatosensory system
Leonard M. Kitzes *(Emeritus)*: Auditory system physiology and development
Robert Leonard: Clinical anatomy education
Frances M. Leslie: Effects of drugs of abuse on central nervous system development
Gary Lynch: Brain aging; synaptic plasticity
David C. Lyon: Anatomy and physiology of visual cortex and thalamus
Diane K. O'Dowd: Regulation of neuronal excitability; development of functional synaptic connections
Charles E. Ribak: Changes in neural circuitry in the epileptic brain
Richard T. Robertson: Developmental neurobiology
Steven S. Schreiber: Mechanisms of neural reorganization in CNS after injury and therapeutic applications
Martin A. Smith: Cellular and molecular mechanisms of synapse formation
Ivan Soltesz: Modulation of CNS inhibition
Oswald Steward: Mechanisms of recovery from injury
John E. Swett *(Emeritus)*: Peripheral nervous system, spinal cord, pain mechanisms
John H. Weiss: Mechanisms of neural degeneration
Xiangmin Xu: Local inhibitory cortical circuits
Fan-Gang Zeng: Auditory prostheses

Research programs in the Department of Anatomy and Neurobiology in the School of Medicine focus on the neurosciences. Faculty interests range across all areas of basic and clinical research including cellular and molecular neurobiology, mechanisms of development, ion channel physiology, experimental neuroanatomy, structure and function of sensory and motor systems, response to injury and regeneration. The Department maintains facilities for electron microscopy, laser confocal microscopy, and computer-based imaging and informatics. Students performing graduate work in the Department are encouraged to become proficient in multiple areas of study using interdisciplinary techniques.

The Department offers graduate training under the auspices of the School of Biological Sciences in conjunction with the Interdepartmental Neuroscience Program (INP). Students are eligible to enter the Department program only after meeting the specific requirements of the INP gateway curriculum. The Department program leads to a Ph.D. degree in Biological Sciences, awarded after successful completion of all requirements.

In concert with other departments, a combined neuroscience core curriculum has been developed which includes offerings in systems neurobiology, neurophysiology, and cellular, molecular, and developmental neurobiology that may be taken as complete or partial fulfillment of the requirements of the INP. Students admitted into the INP who subsequently select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year. Students may take additional elective courses at their own option, but are strongly encouraged to attend departmental seminars and participate in the Journal Club and an annual "Grad Day" symposium. The research topic for a student's dissertation is chosen by the student in consultation with the research advisor. Students are expected to advance to candidacy by the end of the third year by presenting and defending a proposal for their research dissertation. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Courses in Anatomy and Neurobiology

(Schedule of Classes **designation: Anatomy)**

200 Research in Anatomy (2 to 12) F, W, S, Summer. Individual research supervised by a particular faculty member. Prerequisite: consent of instructor. May be repeated for credit.

200R Research in Anatomy and Neurobiology for First-Year Students (2 to 12) F, W, S. Independent research within the laboratories of graduate training faculty in the Department of Anatomy and Neurobiology for first-year Ph.D. students. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be taken for credit three times.

201 Human Gross Anatomy (8) F, W, S. Lecture, three hours; laboratory, nine hours. Study and dissection of the human body, including muscular, skeletal, nervous, and cardiovascular systems. Emphasis on both normal and abnormal structure and function. Prerequisites: graduate standing, consent of instructor.

202B Human Neuroscience (4) S. Lecture, three hours; discussion, one hour; laboratory, one hour. Study of the human nervous system at the systems level including the physiology and anatomy of sensory, motor, and integrative functions. Prerequisite: Anatomy 202A and consent of Department.

203A-B Human Microscopic Anatomy (3-3) F, W. Lecture, two hours; laboratory, three hours. Lecture and laboratory course on human microscopic anatomy. Emphasis is on functional implications of structure of cells and tissues. Prerequisites: graduate standing, consent of instructor.

206 Tutorial in Anatomy. Tutorial, three hours. Series of tutorials on advanced topics in anatomy. Each may be repeated for credit.

206A Surgical Anatomy (3) F. Exploration of topics in gross anatomy. Dissection/library work required. Prerequisites: Anatomy 201A-B.

206B Neuroanatomy (3) W. Exploration of special topics in neuroanatomy. Primarily library work, but study of prepared slides also included. Prerequisite: Anatomy 202.

206C Microanatomy (3) S. Special topics in microanatomy. Primarily library work, but study of prepared histological slides and photographs included. Prerequisites: Anatomy 203A-B.

207 Auditory System: Information Processing and Neurobiology (4). Seminar, four hours. Focuses on the neurobiology of the auditory system. Topics include signal processing, anatomy, physiology, plasticity, development, cochlear prosthetics, psychoacoustics, pathology, and speech. Publications related to hearing are presented and discussed. May be repeated for credit as topics vary.

210A-B Systems Neuroscience (5-5) F, W. Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions. Prerequisite: Neurobiology and Behavior graduate student or consent of instructor. May be taken for credit twice. Same as Neurobiology and Behavior 208A-B.

227A-B-C Current Topics in Neuroscience (1 to 4) F, W, S. Focuses on critical reading, presentation, and discussion of current literature in neuroscience research. Prerequisites: graduate standing and consent of instructor.

230A Molecular, Cellular, and Developmental Neurobiology (4) F. Lecture, three hours. Molecular aspects of the structure and function of neurons and glia including neurotransmission, synaptic modulation, and channels. Neural development at the cellular and molecular level including neurogenesis, pattern formation, trophic factors, axonal growth, and synaptic rearrangement. Prerequisite: consent of instructor. Formerly Developmental and Cell Biology 231D.

292A-B-C Scientific Communication (2-2-2) F, W, S. Seminar, two hours. Small group meetings for graduate students to practice scientific writing, debate, and presentation skills. Satisfactory/Unsatisfactory only. May be repeated for credit.

400E Spinal Cord Injury Research Techniques (4) Summer. Intensive four-week training course in experimental approaches to spinal cord injury. Laboratory techniques cover pathophysiology, experimental models used, and accepted outcome measures (both functional and anatomical). Lectures and seminars by invited speakers and distinguished scholars-in-residence. Prerequisites: Anatomy and Neurobiology graduate student and consent of instructor. Satisfactory/Unsatisfactory only. Same as Neurobiology and Behavior 400E.

DEPARTMENT OF BIOLOGICAL CHEMISTRY

Building D, Room 240, Medical Sciences I; (949) 824-6051
Robert E. Steele, **Interim Department Chair**

Faculty

Bogi Andersen: Transcriptional regulation in epithelial tissues
Pierre Baldi: Computation biology, bioinformatics, probabilistic modeling, machine learning
Phang-Lang Chen: Signal transduction in response to DNA damage and tumor genesis
Xing Dai: Transcriptional/chromatin control of epithelial stem cells
Peter Donovan: The mechanisms by which pluripotent stem cells are formed in the embryo and the uses of such stem cells for transplantation therapy of human disease
John P. Fruehauf: Regulatory elements in cancer-related angiogenesis: prognosis and therapeutic targeting
Anand Ganesan: Disorders of pigmentation and melanoma
Sergei Grando: Non-neuronal cholinergic system
Peter Kaiser: Cell cycle regulation by ubiquitin
Eva Y.-H. P. Lee: Breast cancer etiology and DNA damage checkpoint control
Wen-Hwa Lee: Molecular cancer genetics, mainly the mechanism of tumor suppressor gene functions, cancer progression and novel therapy
Ellis R. Levin: The plasma membrane estrogen receptor (ER) and its effects on the biology of estrogen action
Haoping Liu: Signal transduction, cell cycle regulation, hypha development in yeast
Leslie Lock: Mammalian embryonic stem cells in studies of development and human disease
Frank Meyskens: Carcinogenesis and molecular biology of melanoma and chemoprevention of human cancer
Masayasu Nomura: RNA polymerase I, the nucleolus, and ribosome synthesis in yeast
Daniele Piomelli: Biochemistry and pharmacology of the endogenous cannabinoids and other lipid signaling systems
Suzanne B. Sandmeyer: Retrovirus-like elements in yeast
Robert E. Steele: Evolution of multicellular animals and their genomes
Leslie Michels Thompson: Molecular/biochemical analysis of multiple myeloma and Huntington's disease
Douglas C. Wallace: Molecular and mitochondrial medicine and genetics
Kyoko Yokomori: Chromosome structure organization and its role in genome function and stability
Yi-Hong Zhou: Tumor suppression pathways and molecular prognosis of brain tumors

Faculty research interests in the Department of Biological Chemistry are in the structure and function of chromosomes, signal transduction and its role in cell growth and differentiation control, regulation of gene expression (transcription, protein synthesis, and protein localization), and the molecular basis of development. Genome sequencing projects are making it possible for faculty to exploit information learned about gene function in model organisms for understanding human disease processes. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering and gene mapping. A newly established atomic force microscopy facility is available for structure research. Researchers in the Department are also using DNA microarray technology, next-generation sequencing, and bioinformatics to understand global changes in gene expression in response to the environment.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Cellular and Molecular Biosciences (CMB), which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin thesis research in the second year. Students are required to attend and participate in the departmental research seminars. In addition, students are required to complete three advanced-level graduate courses subsequent to entering the Department's Ph.D. concentration. In the third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Courses in Biological Chemistry

***(Schedule of Classes* designation: Biochem)**

200A, B, C Research in Biological Chemistry (2 to 12) F, W, S. Individual research under the supervision of a professor. May be repeated for credit.

200R Research in Biological Chemistry for First-Year Students (2 to 12) F, W, S. Independent research within the laboratories of graduate training faculty in the Department of Biological Chemistry for first-year Ph.D. students. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be taken for credit three times.

202A, B, C Laboratory Seminar Series (1, 1, 1) F, W, S. Study within a laboratory group including research and journal presentations. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

207 Advanced Molecular Genetics (4) S. Lecture, two hours; quiz, two hours. Teaching genetics and genomics approaches in yeast. Covers cell-type determination, MAPK signaling, cell cycle, ubiquitin, genomics, transposons. Prerequisite: consent of instructor. May be taken for credit two times.

210A Medical Biochemistry and Molecular Biology (12) F. Covers the following topics from a biomedical perspective: protein and nucleic acid biochemistry, carbohydrates, lipids, amino acids, purines and pyrimidines, genome structure, molecular mechanisms of development, and signal transduction.

212 Signal Transduction and Growth Control (4) S. Lecture, two hours; discussion, two hours. Covers various eukaryotic signaling pathways (tyrosine kinase, ras-raf-MAPK, TGF-ß, wnt, JAK-STAT, and FAS) with an emphasis on the experimental underpinnings. The material is covered in lectures and discussions of pertinent papers. Prerequisite: consent of instructor. Same as Pathology 212. *Offered every other year.*

215 Mouse Developmental Genetics (4) S. Lecture, three hours. Introduction to the use of the mouse in contemporary biomedical research. The biology and development of the laboratory mouse, methods for manipulation of the mouse genome and embryos, and examples of application of these methods to understanding mammalian development and homeostasis. Prerequisite: graduate standing, advanced undergraduate standing, or consent of instructor. Same as Developmental and Cell Biology 207.

217 Human Evolution and Behavior (4) S. Lecture, three hours. Covers theories and empirical research concerning the evolutionary origins of human behaviors and their variations. An interdisciplinary course emphasizing both evolutionary psychology (e.g., mating strategies, kinship, and parenting) and molecular evolution (i.e., evolution of genes for various behaviors). Same as Psychology and Social Behavior P271. *Offered every other year.*

225 Chromatin Structure and Function (4) W. Lecture, three hours. Focuses on the role of chromatin/nuclear structure organization in eukaryotic genome regulation. The effects of histone and DNA modification, chromatin remodeling, higher order chromatin structure and nuclear organization on gene regulation, and DNA replication and repair are discussed. Prerequisites: graduate standing and Molecular Biology and Biochemistry 203 and 204, or consent of instructor. *Offered every other year.*

291 Research Seminar (2) F, W, S. Student research-based colloquium covering current topics in gene organization and expression, cell cycle and differentiation, DNA repair, checkpoint control, and the physical, chemical, and biological properties of macromolecules. Students are encouraged to read critically and analyze recent literature. Prerequisite: graduate standing, advanced undergraduate standing, or consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

292A-B-C Scientific Communication (2-2-2) F, W, S. Seminar, two hours. Small group meetings for graduate students to practice scientific writing, debate, and presentation skills. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF MICROBIOLOGY AND MOLECULAR GENETICS

Building B, Room 240, Medical Sciences I; (949) 824-5261
Rozanne M. Sandri-Goldin, **Department Chair**
Marian L. Waterman, **Department Vice Chair**

Faculty

Ruslan D. Aphasizhev: Molecular biology of trypanosomes; mitochondrial RNA editing
Alan G. Barbour: Molecular pathogenesis and immunology of vector-borne infections
Emiliana Borrelli: Dopaminergic system and glial cells in CNS development
K. George Chandy *(Joint)*: Role of potassium channels in lymphocyte function and disease
Michael Demetriou *(Joint)*: The molecular biology and glycobiology of T cell dysfunction in organ-specific autoimmunity
Alan L. Goldin: Molecular analysis of ion channel function and its roles in human diseases
Klemens J. Hertel: Regulation of gene expression by alternative splicing
Anthony A. James: Methods for controlling the transmission of vector-borne diseases, specifically malaria and dengue fever
Janos K. Lanyi *(Joint)*: Bacteriorhodopsin; halorhodopsin; light-driven ion pumps
Masayasu Nomura *(Joint)*: RNA Polymerase I; nucleolus; nuclear transport and function
Manuela Raffatellu: Mechanisms of *Salmonella* interaction with the intestinal mucosa; mucosal barrier function during *Salmonella* infection
W. Edward Robinson, Jr. *(Joint)*: Molecular pathogenesis of lentivirus infection and drug discovery against HIV
Suzanne B. Sandmeyer *(Joint)*: Molecular genetics of a position-specific yeast retrovirus-like element
Rozanne M. Sandri-Goldin: Structural and functional analysis of a multifunctional herpes virus regulatory protein
Paolo Sassone-Corsi *(Joint)*: Signal transduction, gene expression, oncogenesis, circadian clock
Bert L. Semler: Replication and translation of picornaviruses; RNA-protein and protein-protein interactions
Yongsheng Shi: Post-transcriptional gene regulation and its role in human diseases
Ming Tan: Bacterial pathogenesis; gene regulation in Chlamydia
Marian L. Waterman: Wnt signaling in cancer and lymphocytes

The Department of Microbiology and Molecular Genetics provides advanced training to individuals interested in the regulation of gene expression and the structural and functional properties of proteins encoded by these genes. The research in the Department covers a wide range of topics with special emphasis on bacterial gene expression and pathogenesis; viral gene expression and host interactions; trypanosome molecular biology; vector-borne malaria and dengue fever transmission; nuclear-cytoplasmic transport and intracellular signaling; eukaryotic gene expression; mRNA splicing, editing, and processing; cancer genetics and tumor suppressors; ion channel expression and function; genomics and bioinformatics.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Cellular and Molecular Biosciences (CMB) and the program in Mathematical and Computational Biology (MCB), which are described in a previous section. Students admitted into the CMB program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending an original proposal for specific dissertation research. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Courses in Microbiology and Molecular Genetics

(Schedule of Classes **designation: M&MG)**

200A-B-C Research in Microbiology and Molecular Genetics (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor. May be repeated for credit.

200R Research in Microbiology and Molecular Genetics for First-Year Students (2 to 12) F, W, S. Independent research within the laboratories of graduate training faculty in the Department of Microbiology and Molecular Genetics for first-year Ph.D. students. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be taken for credit three times.

201A-B-C Research Topics in Microbiology and Molecular Genetics (1-1-1) F, W, S. Lecture and seminar. Seminars presented by graduate students and faculty of the Department which explore research topics in specialized areas of microbiology and molecular genetics. Opportunity for students to gain experience in the organization, critical evaluation, and oral presentation of current research developments. Prerequisite: consent of instructor. May be repeated for credit. Satisfactory/Unsatisfactory only.

203A-B-C Advanced Studies in Microbiology and Molecular Genetics (1-1-1) F, W, S. Organized within each laboratory group, one to four hours. Advanced study in areas related to faculty research interests. Involves small group study based on readings, discussions, and guest speakers. May be conducted as journal clubs. Satisfactory/Unsatisfactory only. May be repeated for credit.

205A-B-C Basic Immunology Core Lectures (1-1-1) F, W, S. Basic concepts in human immunology including development of the immune system, innate immunity, immunoglobulin structure and genetics, antigen-antibody reactions, the major histocompatibility complex and antigen presentation, T cell and B cell development, initiation of the immune response, effector mechanisms. Prerequisite: consent of instructor.

206 Regulation of Gene Expression (4) W. Lecture, three hours. Aspects of gene expression including the organization of the eukaryotic nucleus in terms of protein-nucleic acid interaction (i.e., chromatin and chromosome structure); comparisons between prokaryotic and eukaryotic gene expression, the enzymology and regulation of RNA transcription in *E. Coli* and other prokaryotes. Enzymology of transcription in eukaryotes. Same as Molecular Biology and Biochemistry 206. (Coordinator, Klemens J. Hertel)

210A Medical Microbiology (4 to 6). Lecture, five hours; laboratory, three hours. The biology of infectious agents, including viruses, bacteria, fungi, and parasites, to provide the foundation in microbiology for the subsequent study of infectious diseases. Lectures, small group sessions with clinicians, and laboratory sessions are used to teach the molecular bases of microbial pathogenesis, diagnostic testing, antimicrobial therapy, and prevention strategies. Prerequisites: first-year curriculum. Graduate students must have approval of the course director and enroll through the Department of Microbiology and Molecular Genetics. *(Medicine 507A-B).*

210B Medical Immunology (6) Lecture, five hours; laboratory, three hours. Covers the cellular and molecular basis of immune responsiveness and the roles of the immune system in both maintaining health and contributing to disease. Material is presented in lectures, clinical correlates, and printed core notes. Includes three required Patient-Oriented Problem Solving (POPS) sessions. Prerequisite: UCI medical students only. Graduate students require consent of course director and must enroll through the Department.

215 Integrative Immunology (4). Lecture and discussion, four hours. Lectures and student presentations of primary literature. The main goal is to achieve a basic understanding of the cellular and molecular basis of innate and adaptive immunity, and how immune function is coordinated at a systems level. Same as Molecular Biology and Biochemistry 215.

216 Pathogenic Microbiology (4) F. Lecture, four hours. Biochemical and genetic properties of infectious agents; identification and behavior of pathogens; activities of toxins; the chemotherapy, biochemistry, and genetics of drug resistance; and epidemiology of infectious diseases. Prerequisite: consent of instructor.

219 Medical Virology (4) F. Lecture, four hours. Animal viruses as disease causing agents, including mechanisms of infection at both the cellular and organismic levels. Topics include comparative studies of different groups of viruses, viral transformation, and mechanisms of viral gene expression. Prerequisite: consent of instructor.

221 Immunopathogenic Mechanisms of Disease (3) S. Lecture, one and one-half hours; seminar, one and one-half hours. Examination of the mechanisms underlying disease states mediated by immune dysregulation. Topics include innate and adaptive immunity, autoimmunity, immunodeficiency, inflammatory disorders, and certain infectious diseases. Emphasis on biological basis of immunopathologies taught from reports in the original scientific literature. Prerequisite: Microbiology and Molecular Genetics 215. Same as Pathology 221.

222 Molecular Pathogenesis of Viral Infections (4) S. Features lectures by faculty on the molecular aspects of viral pathogensis, highlighting both viral and cellular functions. Students give oral presentations and write a research proposal on a selected topic. Prerequisite: Molecular Biology and Biochemistry 205.

225 Molecular Mechanisms of Human Disease (3) S. Provides an overview of the molecular mechanisms of human diseases, including neurologic, hematologic, neoplastic, and infectious diseases. Students gain an understanding of these mechanisms, as well as models of human diseases. Same as Pathology 225.

227 Immunology Journal Club (2) F, W, S. Seminar and discussion, one hour. Advanced topics in immunology as related to an understanding of human disease. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

230 Ethical and Political Issues of Embryonic Stem Cell Policy (4) S. Science policy and how it is created in the U.S.A. Focuses on human embryonic stem cell policy politics and ethics. Designed for graduate students in the sciences.

235 Viruses and Cells (4) W. Covers the molecular mechanisms by which animal and human viruses infect cells and details the host response to infection. Also covers prevention and treatment.

240 M.D./Ph.D. Tutorial (1) F, W, S. Explores a variety of topics that impact careers of medical scientists (M.D./Ph.D students). Topics range from scientific, such as recent advances in particular research areas, to ethical problems brought on by increased technology and intervention in the disease process. May be repeated for credit.

250 Responsible Conduct of Research (2) S. Each session includes a formal presentation by faculty/invited speaker followed by a discussion of case studies related to the topic under consideration. Satisfactory/Unsatisfactory only.

280 Tutorial in Microbiology and Molecular Genetics (2) S. Tutorial, two hours. Tutorial in Microbiology and Molecular Genetics. Presented by the department chair; relates current laboratory research to the literature. May be repeated for credit as topics vary.

292A-B-C Scientific Communication (2-2-2) F, W, S. Seminar, two hours. Small group meetings for graduate students to practice scientific writing, debate, and presentation skills. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

Building D, Room D440, Medical Sciences I; (949) 824-6574
Fritz Lin, **Interim Department Chair**

Experimental Pathology Faculty

Jefferson Y. Chan: Regulation of genes associated with oxidative stress
K. George Chandy: Molecular biology and structure of ion channels; novel therapeutic agents
Luis M. de la Maza: Chlamydia trachomatis vaccines and sexually transmitted diseases
Robert A. Edwards: Mucosal immunology, inflammatory bowel disease, G-proteins, prostaglandins, and chemokines
Mark Fisher: Mechanisms of stroke, vascular neurobiology, blood-brain barrier
Lisa Flanagan-Monuki: Regulation of neural stem cells
Taosheng Huang: Molecular basis of genetic diseases in humans
Anthony A. James: Malaria parasite development; genetic manipulation of insect vectors
John J. Krolewski: Signal transduction pathways regulating the growth and death of normal and neoplastic cells
J. Lawrence Marsh: Regulation of growth factor signaling in patterning, regeneration and oncogenesis
Dan Mercola: Translational cancer biology
Edwin S. Monuki: Cerebral cortex development and disease
Andre J. Ouellette: Mechanisms and regulation of innate immunity in mammalian epithelia
Ellena M. Peterson: Chlamydia vaccine development
W. Edward Robinson: Pathogenesis of retrovirus infections; molecular mechanisms of integration
Sandor Szabo: Pathogenesis of gastrointestinal ulceration, duodenal ulcer
Andrea J. Tenner: Innate immunity; the roles of complement and phagocytes in health and disease
Ping H. Wang: Molecular hormone actions in the normal and diseased heart

The Department of Pathology and Laboratory Medicine offers a Ph.D. in Biological Sciences with a concentration in Experimental Pathology. The graduate program emphasizes experimental approaches to better understand the molecular and cellular mechanisms of disease. Students work in laboratories studying topics ranging from infectious processes such as malaria and the acquired immune deficiency syndrome to innate immunity, including studies on granulocytes and antimicrobial peptides. The principal areas of research investigated by faculty in the Experimental Pathology concentration range from developmental neurobiology to cancer, including prostate cancer.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Cellular and Molecular Biosciences (CMB), which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the start of their second year.

Experimental pathology makes extensive use of both animal models of human disease and studies on human tissues from human subjects. Therefore, the curriculum is heavily weighted on experimental models, including animal models, of human disease. The didactic teaching components of the track are supplemented by a twice-monthly Pathology research conference, in which postdoctoral fellows and graduate students present "research in progress" seminars. This seminar series allows trainees the opportunity to gain invaluable experience in presenting their research to other scientists and provides a mentoring process through which students gain insights from diverse scientific viewpoints.

Students must advance to candidacy during their third year. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Courses in Pathology

(Schedule of Classes **designation: Path)**

200A-B-C Research in Experimental Pathology (2 to 12) F, W, S. Independent research for the Ph.D. program within the laboratories of graduate training faculty in the Department of Pathology and Laboratory Medicine. Corequisite: Pathology 203A-B-C. May be repeated for credit as topics vary.

200R Research in Experimental Pathology for First-Year Students (2 to 12) F, W, S. Independent research within the laboratories of graduate training faculty in the Department of Pathology and Laboratory Medicine for first-year Ph.D. students. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be taken for credit three times.

203A-B-C Advanced Studies in Experimental Pathology (1-1-1) F, W, S. A tutorial course for Ph.D. students in the Department of Pathology entailing attendance at Departmental seminars and critical reading of the scientific literature. Corequisite: Pathology 200A-B-C. May be repeated for credit.

204A, B, C Experimental Pathology Research Seminar (1, 1, 1) F, W, S. Seminar series for graduate students in Experimental Pathology. Students attend seminars and, beginning in their third year of graduate study, present one formal seminar on their graduate research. May be repeated for credit as topics vary.

212 Signal Transduction and Growth Control (4) S. Covers various eukaryotic signaling pathways (tyrosine kinase, ras-raf-MAPK, TGF-ß, wnt, JAK-STAT, and FAS) with an emphasis on the experimental underpinnings. The material is covered in lectures and discussions of pertinent papers. Prerequisite: consent of instructor. Same as Biological Chemistry 212. *Offered every other year.*

221 Immunopathogenic Mechanisms of Disease (3) S. Lecture, one and one-half hours; seminar, one and one-half hours. Examination of the mechanisms underlying disease states mediated by immune dysregulation. Topics include innate and adaptive immunity, autoimmunity, immunodeficiency, inflammatory disorders, and certain infectious diseases. Emphasis on biological basis of immunopathologies taught from reports in the original scientific literature. Prerequisite: Microbiology and Molecular Genetics 215. Same as Microbiology and Molecular Genetics 221.

225 Molecular Mechanisms of Human Disease (3) S. Provides an overview of the molecular mechanisms of human diseases, including neurologic, hematologic, neoplastic, and infectious diseases. Students gain an understanding of these mechanisms, as well as models of human diseases. Same as Microbiology and Molecular Genetics 225.

226 Topics in Experimental Pathology (4) W. Select topics related to principles of experimental pathology including normal host responses to disease are presented. Animal models of human disease are emphasized. Material includes both lectures and critical review of the primary literature.

230D Principles of Experimental Pathology (4) F. Introduces graduate students to the general pathologic processes that mediate disease. Topics include cell injury and repair, inflammation, immunopathology, neoplasia, and genetic diseases. Combines lecture, small group discussion, and oral presentations.

231A Pathology of Cardiovascular Diseases (2) F. For graduate students interested in human cardiovascular disease. Students receive training in physiology, anatomy, and pathologic processes of the heart and blood vessels. Experimental approaches to study such processes are emphasized.

232A Pathology of Pulmonary Diseases (1.5) F. For graduate students interested in pulmonary disease. Students receive training in physiology, anatomy, and pathologic processes of the lungs and airways. Experimental approaches to study such processes are emphasized.

233A Pathology of Renal Diseases (1) F. For graduate students interested in renal disease. Students receive training in physiology, anatomy, and pathologic processes of the kidneys. Experimental approaches to study such processes are emphasized.

234A-B Pathology of Gastrointestinal Diseases (0-2) F, W. For graduate students interested in gastrointestinal disease. Students receive training in physiology, anatomy, and pathologic processes of the gastrointestinal tract. Experimental approaches to study such processes are emphasized. In-progress grading.

235A-B Pathology of Genitourinary Tract Diseases (0-2) F, W. For graduate students interested in genitourinary tract or breast disease. Students receive training in physiology, anatomy, and pathologic processes of the breast and genitourinary tract. Experimental approaches to study such processes are emphasized. In-progress grading.

236B Graduate Neuropathology (1.5) W. For graduate students interested in diseases of the nervous system. Students receive training in physiology, anatomy, and pathologic processes of the central and peripheral nervous system. Experimental approaches to study such processes are emphasized.

292A-B-C Scientific Communication (2-2-2) F, W, S. Seminar, two hours. Small group meetings for graduate students to practice scientific writing, debate, and presentation skills. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF PHYSIOLOGY AND BIOPHYSICS

Building D, Room D340, Medical Sciences I; (949) 824-5863
Michael D. Cahalan, **Department Chair**

Faculty

Kenneth M. Baldwin: Developmental, hormonal, and exercise factors regulating striated muscle gene expression

Ralph A. Bradshaw *(Emeritus)*: Structure and function of polypeptide growth factors and their receptors; mechanisms of protein turnover

Michael D. Cahalan: Ion channels and Ca^{2+} signaling in the immune system

Vincent J. Caiozzo: Cellular and molecular mechanisms regulating the mechanical properties of skeletal muscle

K. George Chandy: Molecular biology of ion channels and their role in immune cells

John Jay Gargus: Molecular analysis of membrane signaling proteins

Alan L. Goldin: Molecular biology of neural channels and receptors

Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes

James E. Hall: Biophysics of membrane channels, gap junctions and water channels

Todd C. Holmes: Ion channels, cellular physiology, neural circuits and behavior; circadian and visual circuits

Lan Huang: Developing and employing mass spectrometry-based proteomic approaches for study of signal transduction networks, identification of protein complexes and characterization of their post-translational modifications

Frances A. Jurnak: Macromolecular crystallography; biochemical and structural studies of a model G protein; EF-Tu; structure/function of plant virulence factors

Janos K. Lanyi: Transport, structure, and energy coupling in bacteriorhodopsin and halorhodopsin

John A. Longhurst: Integrative biology and sensory signaling systems important in cardiovascular regulation; central neural regulation of autonomic outflow inactivation of cardiac afferents and the influence of electroacupuncture

Kenneth J. Longmuir: Intracellular metabolism, sorting, and transport of lipid in mammalian cells; membrane fusion

Hartmut Luecke: Protein crystallography; structure and function of membrane-associated proteins

Jogeshwar Mukherjee: Non-invasive imaging for precise assessment of islet cell mass in human diabetes

Ian Parker: Intracellular calcium and cell signaling

Thomas L. Poulos: Protein crystallography; protein engineering; heme enzyme structure and function

Hamid M. Said: Cellular and molecular mechanisms and regulation of intestinal and renal vitamin transporters

Ivan Soltesz: Plasticity and modulation of inhibitory synaptic neurotransmission

Francesco Tombola: Electrical and chemical sensing in excitable cells, VSD-containing ion channels and enzymes
Bruce J. Tromberg: Optical spectroscopy of tissues and cells
Nosratola D. Vaziri: Vascular biology and role of nitric oxide and reactive oxygen species in regulation of blood pressure; molecular basis of lipid disorders
Larry E. Vickery: Molecular chaperones and protein folding; protein engineering
Ping H. Wang: Molecular actions of insulin-like growth factor I (IGF) in cardiac muscle; complications of diabetes
Stephen H. White: Protein folding in membranes; peptide-bilayer interactions; membrane structure
Albert Zlotnik: Chemokines, cancer metastasis, gene array analysis of human diseases and bioinformatics in immunology

The Department of Physiology and Biophysics offers research opportunities in the molecular biophysics of membranes and proteins, ion channels and signal transduction, endocrinology, molecular and cell biology, developmental neurobiology, and exercise physiology.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the graduate program in Cellular and Molecular Biosciences (CMB), which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year.

The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students participate in a literature review course designed to strengthen research techniques and presentation skills, and attend the weekly Department colloquium. Students advance to candidacy during the third year; each student presents a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee examines the student's qualifications for the successful conduct of doctoral dissertation research. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination. Interdisciplinary dissertation research involving more than one faculty member is encouraged. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Courses in Physiology and Biophysics

***(Schedule of Classes* designation: Physio)**

200 Research in Physiology and Biophysics (2 to 12 per quarter) F, W, S. Individual research directed toward doctoral dissertation and supervised by a particular professor. Prerequisite: consent of instructor. May be repeated for credit.

200R Research in Physiology and Biophysics for First-Year Students (2 to 12) F, W, S. Independent research within the laboratories of graduate training faculty in the Department of Physiology and Biophysics for first-year Ph.D. students. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be taken for credit three times.

201 Introduction to Physiology Research (1 to 4 per quarter) F, W, S. Introduction to research in physiology and related sciences. Students concentrate on techniques emphasized in the various laboratories of the Department. Prerequisite: consent of instructor. May be repeated for credit.

204 Concepts of Biophysics (3) S. Lecture, two hours; laboratory, one hour. Principles of crystallography; introduction to time-resolved absorption and fluorescence spectroscopy; the concepts of kinetic order and kinetic rate theory. Prerequisites: graduate standing in Biological Sciences and consent of instructor. *Offered only if sufficient demand exists.*

205 Electronics for Biologists (4) W. Lecture, three hours; laboratory four hours. Basic principles of electricity; properties and use of discrete components and integrated circuits; circuit analysis and design. Intended for advanced students in the life sciences. Same as Neurobiology and Behavior 249.

206A-B Introduction to Medical Physiology (5-6) W, S. Lecture, six hours; discussion, two hours; other, two hours. Vertebrate physiology with emphasis on humans and on the relationship between the function of normal tissues and the processes of disease. Fundamental principles of physiology and the interrelationships which control organ function. Prerequisites: Physiology 202 and consent of Department.

232 Physiology of Ion Channels (4) S. Lecture, two hours; discussion, two hours. Discusses how ion channels work (molecular/structural biophysics level) and what ion channels do in diverse cell types (cell physiology level).

252 Introduction to Proteomics (4) W. Introduces students to concepts and methods of proteomics including protein identification, expression proteomics, and protein-protein interactions. Prerequisite: consent of instructor. May be taken for credit twice.

290 Topics in Physiology (3) F, W, S. Seminar, two hours; colloquium, one hour. Contemporary research problems in physiology. Students review papers in the current literature and present ideas contained therein to other students. Students present results of their own research and attend presentations given by other students and departmental researchers. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

292A-B-C Scientific Communication (2-2-2) F, W, S. Seminar, two hours. Small group meetings for graduate students to practice scientific writing, debate, and presentation skills. Satisfactory/Unsatisfactory only. May be repeated for credit.

299 Dissertation in Physiology and Biophysics (2 to 12 per quarter) F, W, S, Summer. Preparation and completion of the dissertation required for the Ph.D. or Master of Science degree. Prerequisite: consent of instructor. May be repeated for credit.

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Andrew J. Policano, **Dean**

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Fax: (949) 824-2711; http://www.admissions.uci.edu

Faculty

Dennis J. Aigner, Ph.D. University of California, Berkeley, *Professor Emeritus of Management* (corporate environmental management, international economics, and trade and environment)

Alpesh Amin, M.D., M.B.A. Northwestern University, *Interim Chair, Department of Medicine; Executive Director, Hospitalist Program; Chief, Division of General Internal Medicine; and Professor of Clinical Medicine, Department of Medicine (Hospitalist Program and General Internal Medicine) and Professor of Management* (medical education, curriculum development, hospital medicine, and anticoagulation)

Christine M. Beckman, Ph.D. Stanford University, *Director of the Don Beall Center for Innovation and Entrepreneurship, UCI Chancellor's Fellow, and Associate Professor of Management and Sociology* (entrepreneurship and emerging companies, organizational learning and interorganizational networks, organizational identity and control, gender and organizations, and social entrepreneurship)

Kristin M.J. Behfar, Ph.D. Cornell University, *Assistant Professor of Management* (intra- and inter-group conflict management, team decision making and performance, and culture and group adaptation)

David H. Blake, Ph.D. Rutgers-The State University of New Jersey, *Director of International Programs and Professor of Management* (global business strategy, globalization, leadership strategies, corporate strategies and governance, and ethical business leadership)

Philip Bromiley, Ph.D. Carnegie-Mellon University, *Dean's Professor of Management* (behavioral research in strategic management, strategic decision making, strategy processes, corporate risk-taking, risk assessment in commercial lending, accounting misrepresentation, R&D policy, trust in organizations, and corporate capital investment)

Christopher S. Carpenter, Ph.D. University of California, Berkeley, *Associate Professor of Management, Economics, and Education* (health economics, labor economics, policy evaluation, causes and consequences of youth alcohol use, effects of workplace substance abuse policies, the role of sexual orientation in the labor market, and the effect of public policy on alcohol consumption)

Maria Y. Chandler, M.D. University of California, Irvine, *Health Sciences Associate Clinical Professor, Pediatrics and Management*

Nai-Fu Chen, Ph.D. University of California, Berkeley; Ph.D. University of California, Los Angeles, *Professor of Management* (stability of currency and banking systems, macroeconomic impact on investing, GDP growth, inflation, interest rates, credit risk and the financial market, and hedge funds: asset allocations and portfolio management)

Vidyanand Choudhary, Ph.D. Purdue University, *Associate Professor of Management* (economics of information systems, versioning and product line design for information goods, pricing and quality strategy for information goods, competitive strategy, economics of software as a service and electronic marketplaces and information intermediaries)

Imran S. Currim, Ph.D. Stanford University, *UCI Chancellor's Professor of Management* (marketing research, customer choice, design and marketing of products and services, customer behavior online, and assessing the impact of competitive product and service features and marketing efforts on consumer choice and market share)

Sanjeev Dewan, Ph.D. University of Rochester, *Associate Professor of Management* (business value of information technology investments, impact of Web 2.0 technologies, and electronic markets)

Joseph F. Di Mento, Ph.D., J.D. University of Michigan, *Professor of Planning, Policy, and Design; Law; Environmental Health, Science, and Policy; and Management* (planning, land use and environmental law, use of social science in policy making, legal control of corporate behavior)

Henry Fagin, M.S. Columbia University, *Professor Emeritus of Management* (societal context of organizations)

Lucile C. Faurel, Ph.D. New York University, *Assistant Professor of Management* (financial accounting and capital markets, financial reporting quality, voluntary disclosure, corporate investment strategies, mergers and acquisitions, and intangible assets)

Martha S. Feldman, Ph.D. Stanford University, *Professor of Planning, Policy, and Design, Management, Sociology, and Political Science, and Roger W. and Janice M. Johnson Chair in Civic Governance and Public Management* (organization theory and behavior, stability and change in organizations, decision making, and information processing)

Paul J. Feldstein, Ph.D. University of Chicago, *Director of the Center for Health Care Management and Policy; Professor of Management, Planning, Policy, and Design, and Economics; and Robert Gumbiner Chair in Health Care Management* (economics of health care, reasons for employees switching health care plans, and measuring health plan performance by examining breast cancer outcomes by stage at detection, treatment and survival)

David B. Fitoussi, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Management* (economic impact of information technology [IT] on corporate organizations, relationship between IT and the location of workers, intangible costs and benefits of IT investments, and rules for multi-agent systems in artificial intelligence)

Cristina B. Gibson, Ph.D. University of California, Irvine, *Co-Director of the Center for Leadership and Team Development and Dean's Professor of Management* (communication, interaction, and effectiveness in teams, virtual teams, multicultural collaboration, impact of culture on work behavior, international management, innovation, cross-cultural and technology-enabled communication, executive leadership, motivating employees)

Mary C. Gilly, Ph.D. University of Houston, *Professor of Management* (consumers and technology, services marketing, underserved markets, including Hispanics and the elderly, effects of advertising on employees, and compliance in service encounters)

Yan Gong, Ph.D. University of Wisconsin-Madison, *Assistant Professor of Management* (capabilities, routines, and unexpected events in entrepreneurial firms)

John Graham, Ph.D. University of California, Berkeley, *Professor Emeritus of Management* (global marketing, international business negotiations, innovation, business in Japan and negotiation styles in the United States, Japan, Canada, Mexico, Brazil, Taiwan and The Peoples' Republic of China, South Korea, France, Germany, the United Kingdom, and the Soviet Union)

Vijay C. Gurbaxani, Ph.D. University of Rochester, *Director of the Center for Research on Information Technology and Organizations, Professor of Management, and Taco Bell Chair in Information Technology Management* (information technology and business innovation, sourcing strategies for information systems services, value of information technology investment, and economics of information technology)

David A. Hirshleifer, Ph.D. University of Chicago, *Professor of Management and Economics, and Merage Chair in Business Growth* (psychology, social interactions and markets, investments, corporate finance, and risk management)

Joanna L. Y. Ho, Ph.D. University of Texas at Austin, *Professor of Management* (corporate governance, performance evaluations and compensation systems, use of information technology to improve firm performance, Sarbanes-Oxley Act of 2002, international accounting and management practices, understanding how managers make investment decisions)

Philippe Jorion, Ph.D. University of Chicago, *UCI Chancellor's Professor of Management and Economics* (financial risk management, global asset allocation, exchange rate models, fixed income markets, and hedge fund investments)

L. Robin Keller, Ph.D. University of California, Los Angeles, *Professor of Management* (creative problem structuring, cross-cultural decision making, fairness in decision making, decision analysis theory and applications, medical decision making, multiple attribute decision making, probability judgments, ambiguity of probabilities or outcomes, risk analysis for terrorism, environmental, health, and safety risks, time preferences and discounting, utility models, and models of risk)

Sreya Kolay, Ph.D. University of Rochester, *Assistant Professor of Management* (pricing and promotion strategies relating to design of optimal pricing contracts for firms in various markets, vertical market and distribution channels topics including analysis of mechanisms that help a manufacturer to achieve channel coordination, advertising and durable goods)

Kenneth L. Kraemer, Ph.D. University of Southern California, *Associate Director of the Center for Research on Information Technology and Organizations, and Professor Emeritus of Management* (use and impact of information technology in organizations, globalization of information technology production and use, and management of information systems)

Loraine G. Lau-Gesk, Ph.D. University of California, Los Angeles, *Assistant Professor of Management* (the influence of affect or emotions in consumer decision making and the role of culture and self in consumer persuasion and judgment)

Newton Margulies, Ph.D. University of California, Los Angeles, *Associate Dean, Executive Education and Professor Emeritus of Management* (organizational behavior, organizational change and development, analysis of team functioning, organizational behavior in health care organizations)

Joseph W. McGuire, Ph.D. Columbia University, *Professor Emeritus of Management* (business strategy, entrepreneurship, organizational economics)

Richard B. McKenzie, Ph.D. Virginia Polytechnic Institute and State University, *Professor of Management and Economics, and Walter B. Gerken Chair in Enterprise and Society* (monopoly in economic theory and law, various pricing strategies, rational and irrational behavior in economic theory, Microsoft antitrust case, public policies relating to digital goods, and orphanages and public policy relating to foster care)

Alexander M. Mood, Ph.D. Princeton University, *Professor Emeritus of Management*

Peter Navarro, Ph.D. Harvard University, *Professor of Management* (electric utilities regulation, growth management, industrial policy, public policy, and the international issue of regulation and trade advantage)

Alexander Nekrasov, Ph.D. University of Minnesota, *Assistant Professor of Management* (financial reporting, role of accounting in security valuation, market efficiency, and financial analysts' forecasts)

David Neumark, Ph.D. Harvard University, *Professor of Economics and Management* (labor economics)

Jone L. Pearce, Ph.D. Yale University, *Co-Director of the Center for Leadership and Team Development and Dean's Professor of Management* (organizational behavior, employee perceptions of workplace trust and justice, contract labor, compensation, management practices in the transition from communism, personal relationships as the basis for organization)

Cornelia A. R. Pechmann, Ph.D. Vanderbilt University, *Professor of Management* (effectiveness of various anti-smoking and anti-drug advertising tactics, consumer behavior, advertising strategy and regulation, advertising to adolescents, deceptive advertising, product placements, role models in advertising, pharmaceutical advertising, and retailing, micro-marketing, and geographic information systems)

Morton P. Pincus, Ph.D. Washington University in St. Louis, *Dean's Professor of Management* (relation between accounting information and capital market variables, including the pricing of accruals in international capital markets, earnings management, Sarbanes-Oxley Act and earnings management, usefulness of book-tax differences in detecting earnings management, and accounting method choices)

Andrew J. Policano, Ph.D. Brown University, *Dean of The Paul Merage School of Business and Professor of Management and Economics* (financial institutions and markets, macroeconomics, monetary policy, and business school trends)

Lyman W. Porter, Ph.D. Yale University, *Professor Emeritus of Management* (management education and development, organizational psychology, and human resource management)

Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer with Security of Employment Emerita of Management* (men and women at work, cultural diversity, business and government, and managing nonprofits)

Claudia B. Schoonhoven, Ph.D. Stanford University, *Professor of Management* (evolutionary dynamics of technology-based firms, innovation, and entrepreneurship)

Christopher G. Schwarz, Ph.D. University of Massachusetts, Amherst, *Assistant Professor of Management* (hedge funds, mutual funds, investments, regulation and money management)

Carlton H. Scott, Ph.D. The University of New South Wales, *Professor of Management and of Electrical Engineering and Computer Science* (application of quantitative methods to decision making problems, development of new theory for optimization, operations research and operations management)

Shivendu Shivendu, Ph.D. University of Southern California, *Assistant Professor of Management* (economics of information systems, digital goods supply chain, and forecasting and analytical modeling)

Kut C. So, Ph.D. Stanford University, *Professor of Management* (operations and supply chain management, design of manufacturing and service systems, just-in-time production systems, time-based management, and mathematical modeling and operations research)

Zheng Sun, Ph.D. New York University, *Assistant Professor of Management* (empirical asset pricing, investments, market microstructure and banking)

Eli Talmor, Ph.D. University of North Carolina at Chapel Hill, *Professor Emeritus of Management* (corporate finance, executive compensation and managerial accounting)

Siew Hong Teoh, Ph.D. University of Chicago, *Dean's Professor of Management* (capital market issues in accounting and finance and limited attention and earnings management effects on security pricing and disclosure)

Denis Trapido, Ph.D. Stanford University, *Assistant Professor of Management and Sociology* (formation of social relations in economy, social effects of economic competition, and the role of motive signaling in shaping interfirm social networks)

Rajeev K. Tyagi, Ph.D. University of Pennsylvania, *Professor of Management* (competitive marketing strategies, game theory, distribution channels, and new products)

Kerry D. Vandell, Ph.D. Massachusetts Institute of Technology, *Director of the Center for Real Estate and Professor of Management, Law, and Planning, Policy, and Design* (mortgage analytics, housing and urban economics and policy, appraisal theory, and the extension of real estate and urban land economic theory)

Alladi Venkatesh, Ph.D. Syracuse University, *Professor of Management* (new media and information technologies in the home, social impacts and consumer issues, household technology adoption and diffusion, and postmodern consumer culture)

Wenqing Wang, Ph.D. University of California, Los Angeles, *Assistant Professor of Management* (empirical asset pricing, liquidity, risk, institutional equity flows, equity ownership, implications on stock returns)

Margarethe F. Wiersema, Ph.D. University of Michigan, *Dean's Professor of Management* (CEO succession and dismissal, CEO replacement, corporate strategy–product and international diversification, and corporate governance)

Shuya Yin, Ph.D. University of British Columbia, *Assistant Professor of Management* (supply chain management, operations management, competition and cooperation in supply chain, and application of cooperative and non-cooperative game theory)

Yu Zhang, Ph.D. Institut Européen d'Administration des Affaires (INSEAD), *Assistant Professor of Management* (interaction between strategy and capital markets, competitive strategy and corporate governance)

Lu Zheng, Ph.D Yale University, *Associate Professor of Management* (investments, equity markets, mutual funds, hedge funds, investor behavior and expectations and institutional trading)

OVERVIEW

The Paul Merage School of Business offers the B.A. degree in Business Administration, the B.S. degree in Business Information Management (offered jointly with the Donald Bren School of Information and Computer Sciences), the M.B.A. (Master of Business Administration) degree, the Ph.D. degree in Management, and undergraduate minors in Management and Accounting. The Master's degree is professional in nature and is intended to provide future managers with a firm foundation in the basic disciplines and in management tools and techniques; the Ph.D. in Management is for those who wish to pursue a career in scholarly research. The undergraduate minor in Management is designed for those who wish to gain some insight into issues of modern management, as well as those who anticipate future graduate work in management. In establishing the undergraduate minor in Accounting, the faculty

anticipated three types of students to be drawn to courses in accounting: (1) students who wish to meet the accounting course work eligibility requirements to sit for the uniform CPA examination, (2) students preparing for careers in private accounting or in other fields that require some knowledge of accounting, and (3) students planning to pursue a graduate degree in accounting who wish early guidance and undergraduate work appropriate to this career objective.

Degrees

Business Administration ..... B.A., M.B.A.
Business Information Management[1] ..... B.S.
Management ..... Ph.D.

[1] Offered jointly with the Donald Bren School of Information and Computer Sciences.

HONORS

Graduation with Honors. Honors at graduation, e.g., *cum laude, magna cum laude, summa cum laude,* are awarded to approximately the top 12 percent of the graduating seniors. To be eligible for honors, a general criterion is that students must have completed at least 72 units in residence at the University of California. The student's cumulative record at the end of the final quarter is the basis for consideration for awarding Latin honors. Other important factors are considered (see page 52).

The Waltos Group of Northwestern Mutual Future Business Leader Scholarship. This scholarship awards $2,500 to two outstanding undergraduate students per academic year in The Paul Merage School of Business. Applicants entering their sophomore, junior, or senior year in the Business Administration major, the minor in Management, or the minor in Accounting who demonstrate financial need are eligible to apply. Students must be enrolled full-time and have a minimum 3.0 GPA for consideration.

UNDERGRADUATE PROGRAMS

Bachelor of Arts in Business Administration

The undergraduate Business Administration program at The Paul Merage School of Business educates students to understand and apply the theories and concepts of effective business and management and prepares students for a wide variety of careers and life experiences. Business Administration majors can pursue careers in the for-profit and not-for-profit sectors or can proceed on to graduate school in several disciplines including business, economics, and law. The program provides a broad learning experience in a multidisciplinary and global context and focuses on the development of essential managerial skills, especially critical thinking, quantitative and qualitative analysis, and effective communication skills.

The Business Administration major at The Paul Merage School of Business offers a traditional business curriculum similar to those at other top business schools in the country. The major is broad, drawing on the social sciences more generally to study organizations, interpersonal communication skills, individual and group behavior, leadership, strategy, financial and accounting issues, ethics, information technology, marketing, and a variety of other topics in the content of a rapidly changing global environment.

The faculty strongly encourages majors to create an educational program composed of courses within and outside the Merage School that provide substance and focus to their careers and enable them to pursue their own personal interests. While preparing students for careers in management, the Merage School, through academic advising, will help students fashion an undergraduate program that they can tailor to their own unique career objectives.

Examples of programs of study that allow Business Administration majors to blend management education with specific industry areas include (but are not limited to) bioscience business, government service, international commerce, arts management, entrepreneurship in computer gaming, and other combinations. Through appropriate choice of courses, students can prepare to pursue a law degree, a master's degree in a variety of areas, or a doctoral program in business or related disciplines.

Students are required to complete 10 business courses that provide a foundation in essential core business competencies, followed by a minimum of 10 business electives selected from specializations. Students select a minimum of one of three specializations in Accounting, General Management, or Marketing. This program of study enables students to develop areas of focus as they pursue the Business Administration major. Because much business is conducted on a global scale, students are required to either participate in the University's Education Abroad Program or to take one of a number of designated courses that stresses the international dimension of a business area. Students interested in learning more about the full array of requirements for professional licensing in Accounting are encouraged to visit http://www.dca.ca.gov/cba and http://www.cpa-exam.org/.

While academic course content is crucial to an undergraduate business major, auxiliary noncurricular programs also are important to students' academic experience. The Merage School incorporates a cocurricular element into the classroom experience. Drawing from Merage School and University resources, students are exposed to opportunities to enhance communication and presentations skills, attend formal speaker events, and engage in informal mentoring. The Merage faculty is committed to ensuring that undergraduate majors have ample opportunity to enhance their writing and presentation skills through class assignments and a business communication course.

Students are strongly encouraged to become involved with the Merage Undergraduate Student Association and with the clubs that comprise the Alliance of Business Students. The Alliance consists of several student organizations. These high-profile student groups promote interaction between students and the surrounding business community through their Corporate Speaker Series, social activities, and student/employer receptions. Students with an entrepreneurial interest are invited to participate in the annual Merage School Business Plan Competition offered by the Don Beall Center for Innovation and Entreprenuership.

Work experience is an important way to learn about business and management. UCI's Internship Program, sponsored by the Career Center, can assist students in finding opportunities to work in either voluntary or paid positions in business, nonprofit, or industrial settings. Students who plan to enter business or apply to a graduate school of business or management in the future will find it necessary to supplement their academic work with a variety of practical experiences.

Another opportunity is UCI's Undergraduate Administrative Intern Program, which offers selected students the opportunity to assume one-year positions under the guidance of University administrators. Students can choose from a range of offices in which they will be asked to undertake special projects specifically related to the management and administration of UCI and higher education in general. These internships are supplemented by a two-quarter management seminar and by field trips to administrative conferences such as meetings of The Regents of the University of California.

ADMISSION TO THE MAJOR IN BUSINESS ADMINISTRATION

In the event that the number of students who elect Business Administration as a major exceeds the number of positions available, applicants may be subject to screening beyond minimum University of California admissions requirements.

Freshmen: Preference will be given to those who rank the highest using the selection criteria as stated in the Undergraduate Admissions section of the *Catalogue.*

Transfer students: Junior-level applicants with the highest grades overall (minimum cumulative GPA of 3.0) and who satisfactorily complete lower-division courses equivalent to UCI's calculus (Mathematics 2A-B), economics (Economics 20A-B), and statistics and accounting (Management 7, 30A, 30B) will be given preference for admission. Management 10 may be completed at UCI. Admission to the major will be competitive due to limited space availability.

CHANGE OF MAJOR

Students who wish to declare the Business Administration major should contact The Paul Merage School of Business Undergraduate Counseling and Student Affairs Office, 226 MPAA Building, for information about change-of-major requirements, procedures, and policies. Information can also be found at http://www.changeofmajor.uci.edu. Applications to declare the major can be made in the spring of the sophomore year, with review of applications and selection to the major to be governed by the Undergraduate Programs Committee. Admission to the major is very competitive due to limited space availability. Completion of the prerequisite courses does not guarantee admission into the major.

REQUIREMENTS FOR THE B.A. DEGREE IN BUSINESS ADMINISTRATION

University Requirements: See pages 55–62.

Major Requirements

A. *Lower-Division:* Mathematics 2A-B, Economics 20A-B, Management 7, 10, 30A, 30B.

B. *Upper-Division Core:* Management 101, 102, 105, 107, 109, 110.

C. *Business Electives:* 10 upper-division Merage School electives*, to be fulfilled by completing one of the specializations below.

Specialization in Accounting (10 courses*): Requires Management 131A, 131B, 132A, and three accounting electives selected from Management 132B, 133, 135, 136, 137, 138, 194, 195, and four additional (four-unit) upper-division Merage School electives selected from Management 119–197.

Specialization in General Management (10 courses*): Requires completion of four (4) two-course sets, selected from the following sets:

Course Sets (select four sets, selecting two courses from each of the four sets):

Accounting: Management 131A, 131B, 132A, 132B, 133, 135, 136, 137, 138, 194, 195

Finance: Management 141, 144, 147, 149

Marketing: Management 150, 151, 152, 153, 154, 155, 157, 158, 159

Public Policy/Economics: Management 161, 162, 163, 164, 168, 169

Information Systems: Management 170, 173, 174, 175, 178, 179

Operations and Decision Technologies: Management 180, 182, 184, 189, 196, 197

Organization and Management: Management 119, 121, 122, 123, 125, 128, 129

and

Two additional (four-unit) upper-division Merage School electives selected from courses numbered Management 119–197.

Specialization in Marketing (10 courses*): Requires six Marketing electives selected from Management 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, and four additional (four-unit) upper-division Merage School electives selected from courses numbered Management 119–197.

D. *International Business Requirement:* Fulfillment of the International Business requirement by

1. completing one course selected from Management 119, 121, 128, 135, 144, 154* (which may also be utilized for specified category C requirements above); *or*
2. participating in select UC Education Abroad Program options, with prior approval of the Associate Dean.

* By exception, students may petition the Associate Dean to accept an upper-division elective that has business content equivalent to a stated Merage elective.

NOTE: Students majoring in Business Administration may not minor in either Management or Accounting, or double major in Business Information Management. Students may pursue more than one Merage School specialization; however, no more than two courses may be utilized toward requirements for more than one specialization outlined above.

Bachelor of Science in Business Information Management

As the business environment becomes increasingly global and information-centric, the need has increased for graduates who understand and can use technology that gathers and provides information, who are able to distill and recognize patterns in that information, and who can apply those analyses to achieve business objectives.

The undergraduate Business Information Management major administered by the Donald Bren School of Information and Computer Sciences is a collaborative, interdisciplinary degree program between the Bren School and The Paul Merage School of Business. The program seeks to educate students to understand and then apply the theories and concepts of a broad, integrated curriculum covering computing, informatics, business fundamentals, and analytical decision-making. The major prepares students for a wide variety of careers and life experiences. Business Information Management majors can pursue careers in the for-profit and not-for-profit sectors or can proceed to graduate school in several disciplines, including information systems, computing, economics, business, and law.

The curriculum is presented across three general academic areas: Computing (computer science, informatics, and software); Business Foundations (accounting, finance, marketing, strategy, and operations); and Analytical Methods (mathematics, statistics, economics, management science, and decision analysis). The fundamentals of information and computer science, including the rudiments of software design and construction with an emphasis on data management, provide the foundation for understanding, describing, and evaluating the technology through which most

business information is gathered and presented. The business fundamentals, covering all the functional areas in the Merage School, provide a background and context in which information and its analysis will be applied.

For complete information about the major, see the Interdisciplinary Studies section of the *Catalogue,* page 369.

Undergraduate Minor in Management

The Paul Merage School of Business faculty offer an undergraduate minor in Management which consists of seven courses: one lower-division introductory course and six upper-division courses.

In establishing the undergraduate minor in Management, the faculty anticipated three types of students to be drawn to courses in administration: (1) students who wish to learn about the management of organizations as a way of preparing for a career in business, (2) students preparing for careers in other fields that require some knowledge of management, and (3) students who expect to go on to graduate work in management who wish early guidance and undergraduate work appropriate to this career objective.

Students are eligible to apply for the minor in Management if they have completed all prerequisite courses (including Management 5) with a grade no lower than C (2.0) and have upper-division standing. Completion of the prerequisite courses does not guarantee admission to the minor in Management. Admission is on a competitive basis and students must submit an application, transcripts, and a statement of purpose. Applications are accepted on a quarterly basis. Interested students are encouraged to obtain further information from the Undergraduate Counseling and Student Affairs Office, 226 MPAA Building; http://www.merage.uci.edu/.

Prerequisite Courses

The following are prerequisites for enrolling in the upper-division undergraduate minor courses: Management 5; Economics 20A; and one course or one sequence selected from Anthropology 10A-B-C, Engineering CEE11, Economics 15A-B, Mathematics 7/Statistics 7, Mathematics 131A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Ecology 166A-B-C, Social Science 9A-B-C or 10A-B-C, or Sociology 10A-B-C.

Transfer students should check with their college counselor for established equivalencies for these prerequisite courses.

NOTE: Individual courses that students may select within the minor may require additional prerequisites, including Mathematics 2A.

Requirements for the Undergraduate Minor in Management

Completion of seven courses:

A. One lower-division core course: Management 5.

B. Four upper-division core courses selected from Management 101, 102, 105, 107, 109, 185.

C. Two additional courses selected from the core course list above, Management 6, 119–129, 141–184, 189, 192, 193, 196, 197, and 190 (provided specific topics have not been covered in other courses).

With Merage School faculty approval, a student may substitute a maximum of one course. Students participating in the UC Education Abroad Program may substitute a maximum of two courses, with Merage School faculty approval.

NOTE: Students may not receive both the minor in Management and the minor in Accounting.

Undergraduate Minor in Accounting

The Paul Merage School of Business faculty offer an undergraduate minor in Accounting consisting of seven upper-division courses. In addition, two lower-division introductory accounting courses, one lower-division microeconomics course, and one lower-division single variable calculus course are prerequisites to the minor program.

In establishing the undergraduate minor in Accounting, the faculty anticipated three types of students to be drawn to courses in accounting: (1) students who wish to meet the accounting course work eligibility requirements to sit for the uniform CPA examination, (2) students preparing for careers in private accounting or in other fields that require some knowledge of accounting, and (3) students planning to pursue a graduate degree in accounting who wish early guidance and undergraduate work appropriate to this career objective.

Students are eligible to apply for the minor in Accounting if they have upper-division standing and have completed Management 30A and 30B with a grade no lower than B (3.0) and all other prerequisite courses with a grade no lower than C (2.0). Completion of the prerequisite courses does not guarantee admission to the minor in Accounting. Admission is on a competitive basis and students must submit an application, transcripts, and a statement of purpose. Applications are accepted on a quarterly basis. Interested students are encouraged to obtain further information from the Undergraduate Counseling and Student Affairs Office, 226 MPAA Building; http://www.merage.uci.edu/.

Prerequisite Courses

The following are prerequisites for enrolling in the upper-division undergraduate minor courses: Economics 20A, Mathematics 2A, Management 30A, and Management 30B.

Transfer students should check with their college counselor for established equivalencies for these prerequisite courses. Students not taking Management 30A and 30B at UCI during regular session or summer session must complete Management 131A with a minimum grade of B prior to admission in the program.

NOTE: Individual courses that students may select within the minor may require additional prerequisites.

Requirements for the Undergraduate Minor in Accounting

Completion of seven courses:

A. Three core accounting courses: Management 131A, 131B, 132.

B. Two accounting elective courses selected from Management 132B, 133, 135, 136, 137, 138, 194, and 195.

C. Two additional courses selected from the upper-division accounting elective course list above, Management 6, 101, 102, 105, 107, 109, 119–129, 141–184, 189, 192, 193, 196, 197, and 190 (provided topics have not been covered in other accounting courses).

With Merage School faculty approval, a student may substitute a maximum of one minor course.

NOTE: Students may not receive both the minor in Accounting and the minor in Management.

GRADUATE PROGRAMS

Educational Objectives

The Paul Merage School of Business offers a generalist M.B.A. degree and a learning experience that prepares graduates for a lifetime of professional and personal growth with increasingly important enterprise-wide responsibilities. The rigorous curriculum, combined with extensive professional and interpersonal training and opportunities made available through the School's M.B.A. Career Center, allows students to gain theoretical perspectives that are in turn tested and affirmed with practical application. The result is an environment that fosters the development of professional and personal skills vital to contemporary executives or managers. Students are encouraged to develop their ability to lead change by mastering communication skills, to work productively and actively within a team-oriented environment, to gain a solid grasp of quantitative skills, and to appreciate and effectively employ those solutions that involve the integration and implementation of information and technology to offer creatively viable business options.

The School has developed a thematic approach to business education: sustained growth through strategic innovation. The goal is to graduate leaders with the exceptional ability to grow their organizations through strategic innovation supported by analytic decision making, information technology, and collaborative execution. Although a solid grounding in basic business disciplines provides the foundation for effective management, graduates are encouraged to aim higher. They learn about change as it takes place within the context of a knowledge-based, technology-driven society where information and its effective use are vital to establishing a competitive edge. Students, whether they are interested in finance, marketing, general management, strategic planning, accounting, operations, health care, human resources, international business, or other areas, will be thoroughly imbued and comfortable with the nature and importance of strategic innovation and how crucial it is toward sustaining growth in today's competitive global economy. Further, they will understand the impacts of technology and the technological processes that enable the gathering, analysis, dissemination, and use of information to change the way business is done. The thematic approach of the School provides a skill-set, core understanding, and depth of knowledge that will enable its graduates to be effective managers who are not only proficient in business procedures but have the leadership qualities and conceptual framework to affect change by transforming conventional business practices or perhaps even inventing new business processes and management techniques.

Additionally, The Paul Merage School of Business has achieved a national reputation for excellence in graduate management education in the health care industry through the Health Care Executive M.B.A. (HCEMBA) program. Industry managers and health care professionals learn about managerial challenges and issues in the health care industry where hundreds of health care providers, medical device and instrumentation companies, and biosciences firms are headquartered. A joint M.D./M.B.A. program is also available.

General Admission Requirements

Evaluation of the applicant's file for admission to the Master's and Ph.D. degree programs will consist of an integrated assessment of all materials (test scores, transcripts of previous academic work, essays, and letters of recommendation). The University admission standard of a 3.0 or better undergraduate grade point average (on a 4.0 scale) is required. The minimum TOEFL (Test of English as a Foreign Language) score acceptable for study at the School for all M.B.A. programs is 600 on the paper-based test; 250 or better on the computer-based test; or 100 or better on the Internet-based test. Substantive work experience is considered for applicants to M.B.A. programs.

Requests for application material should be addressed to either the Full-Time M.B.A., M.B.A. Programs for Working Professionals, or Ph.D. Program at the University of California, Irvine, The Paul Merage School of Business, Irvine, CA 92697-3125; mba@uci.edu, or gsm-phd@merage.uci.edu; http://www.merage.uci.edu/.

Doctor of Philosophy in Management

The Paul Merage School of Business admits students for the Ph.D. in the fall quarter only. The deadline for application is January 4. The Ph.D. program requires a commitment to full-time study. In addition to the other requirements, Ph.D. applicants are encouraged to submit a previously prepared paper (research report, research essay, case study) which may be indicative generally of the applicant's interests and capabilities.

The School offers the Ph.D. in Management to students with backgrounds in a variety of disciplines. While a master's degree is preferred, students may be admitted to the doctoral program directly from the baccalaureate degree. There are many appropriate undergraduate majors, including (but not limited to) psychology, political science, business or public administration, mathematics, computer sciences, economics, sociology, and so forth. Students with academic strengths in disciplines not usually considered as precursors for management (e.g., natural sciences, humanities, and the arts) are encouraged to apply. The Ph.D. program is designed to prepare students for academic careers in a number of the fields of management, e.g., organization and management, strategy, operations and decision technologies, management information systems, finance, accounting, and marketing. Requirements of the Ph.D. program include a broad knowledge of core management disciplines. In addition, the Ph.D. student must qualify as a skilled researcher and must complete a dissertation demonstrating these skills.

The Ph.D. program is divided into two phases: qualification and dissertation. In the qualification phase the student prepares for dissertation research in an area of specialization. This phase is completed when an oral qualifying examination is passed and the candidacy committee recommends advancement to candidacy for the Ph.D. The normative time for advancement to candidacy is three years. The dissertation phase involves a significant original research project which demonstrates the Ph.D. student's creativity and ability to launch and sustain a career of research. The normative time for completion of the Ph.D. is four years, and the maximum time permitted is six years.

Requests for information should be addressed to the University of California, Irvine, The Paul Merage School of Business, Doctoral Program Admissions Office, 418 School of Business, Irvine, CA 92697-3125; phd@merage.uci.edu; http://www.merage.uci.edu/AcademicPrograms/DoctoralProgram/index.aspx.

Master's Degree Programs

The Paul Merage School of Business offers a variety of programs leading to the M.B.A. (Master of Business Administration) degree. These include a two-year, full-time M.B.A. program, and three part-time M.B.A. programs: a 21-month Executive M.B.A. program, a two-year Health Care Executive M.B.A. program, and a three-year Fully Employed M.B.A. program. A five-year joint M.D./M.B.A. program is offered in conjunction with the School of Medicine.

M.B.A. PROGRAM

The Paul Merage School of Business admits students to the two-year, full-time M.B.A. program in the fall quarter. Students from a variety of undergraduate disciplines, including liberal arts, social sciences, physical or biological sciences, computer science, and engineering, are encouraged to apply. The final deadline for completion of all phases of the application procedure is April 15. In

addition to the general University rules governing admission to graduate study, the School normally requires the completion of the Graduate Management Admission Test (GMAT). There are no specific prerequisite requirements for the full-time M.B.A. program. However, the Admissions Committee does look for evidence of quantitative proficiency in all applicants. The Committee strongly recommends that applicants complete, at a minimum, a college-level mathematics and statistics course.

The evaluation of an applicant's file for admission consists of an integrated assessment of all materials submitted including test scores, transcripts of previous academic work, statements on application forms, and letters of recommendation. Above and beyond these factors, substantive work experience is given serious consideration in the evaluation process.

The M.B.A. program at The Paul Merage School of Business is distinctive for its focus on providing students the capabilities and skills to succeed in the technology-rich Innovation Economy. Students develop a sophisticated understanding of the new requirements for success in the School's new curriculum that emphasizes the three critical drivers of the Innovation Economy: Strategic Innovation, Information Technology, and Analytical Decision Making.

This understanding is advanced through experiential learning course work in which teams of students work on challenging assignments for leading companies. Another distinctive feature of the program is the "Edge" capstone course on the future of business where students explore specific industries and companies and discover what actions must be taken today to reap the benefit from long-term trends in technologies, geopolitics, demographics, and macroeconomics.

The full-time M.B.A. program requires a minimum of 92 units with a minimum grade point average of 3.0 in the Core and overall. The curriculum consists of courses divided into two groups designed to achieve specific educational objectives. The courses are divided as follows: 13 required Common Core Courses (50 units) and 42 units of elective courses which students select to emphasize career goals and educational interests. A thesis is not required.

Required Course Work. Common Core Courses, each of which is four units, are Management of Complex Organizations, Statistics for Management, Management Science, Operations Management, Organizational Analysis, Financial and Managerial Accounting, Microeconomics, Macroeconomics or Business and Government, Information Technology for Management, Marketing Management, Managerial Finance, Business Strategy.

International Requirement. Students must fulfill the requirement in one of the following ways: completion of a Paul Merage School of Business international elective in a functional area; participation in a Paul Merage School of Business international exchange program; or completion of an upper-division or graduate international course offered by another UC school, with the approval of The Paul Merage School of Business Associate Dean.

Electives. In addition to the core courses, 42 more units of elective courses are required. The major emphasis in the elective courses is to develop additional depth in a discipline or interdisciplinary area or specialized competence in the use of a particular set of technical tools and methods. Students select their electives in light of their educational and career goals and interests.

The 3-2 Program for Undergraduates

In addition to the full-time master's program for students who have already received a bachelor's degree, outstanding UCI undergraduate students may apply to enter a cooperative 3-2 Program with the School and most other campus units. Acceptance into the 3-2 Program constitutes advanced admission to the graduate program. Such students complete their undergraduate major requirements by the end of their junior year. During their senior year, they take graduate courses in the School. These courses are used to satisfy their undergraduate unit requirements, and at the same time apply toward their graduate degree. Successful completion of the requirements in the program normally leads to the bachelor's degree in the cooperating discipline after the fourth year, and the M.B.A. degree after the fifth year. Students should consult with their academic counselor in their major school early in their academic careers for further information about completing undergraduate requirements in three years. Students contemplating entering such a program should contact The Paul Merage School of Business prior to, or early in, the start of their junior year for the purpose of program consultation. NOTE: With the exception of 3-2 students, no undergraduates will be enrolled in Paul Merage School of Business graduate-level courses.

M.D./M.B.A. Degree Program

The M.D./M.B.A. program requires five or six years for completion. It is aimed at individuals who are exceptional in ability and motivation and who seek a career as physicians with major responsibility for administration and management in health care organizations and institutions. Students in this program pursue a combined curriculum for an M.D. degree from the School of Medicine and an M.B.A. degree from The Paul Merage School of Business.

Students must be currently enrolled in the M.D. program and in good academic standing in order to apply to the combined M.D./M.B.A. program. During their second or third year of medical school, interested students submit an application to The Paul Merage School of Business Admissions Committee, after review by the School of Medicine. Final acceptance to the program is granted by The Paul Merage School of Business, and M.B.A. course work begins following completion of the student's third year of medical school. Students should be aware that enrollment in the M.D. program does not guarantee acceptance into the M.B.A. program.

The MCAT, along with the completion of three years of medical school training in good standing and passage of USMLE Step I, currently serve as a waiver for the GMAT entrance examination usually required for application to the M.B.A. program. The total number of units required to graduate for each program separately are satisfied in the M.D./M.B.A. program. Contact the M.D./M.B.A. Advisor at (949) 824-5388 for more information.

Special Opportunities

The Paul Merage School of Business offers course work in health care management within the M.B.A. program. The courses provide training not only in health care and related issues, but also expose students to professionals in the areas of management, finance, marketing, and strategic planning.

In today's interconnected global business world, it has become increasingly important for management students to learn to operate in an international environment. M.B.A. students in the full-time program can gain first-hand knowledge of the culture and management practices of other industrialized countries by participating in an academic exchange with universities located abroad. This experience, combined with course work in international management, prepares students for the demands and complexities of the growing global economic environment. Currently, The Paul Merage School of Business has exchange relationships with Bocconi University, Milan, Italy; Budapest University of Economic Sciences (BUES),

Budapest, Hungary; Chinese University of Hong Kong (CUHK), Hong Kong; ESSEC Graduate School of Management, France; Hong Kong University of Science & Technology, Hong Kong; Maastricht University, Netherlands; National University of Singapore (NUS), Singapore; Pontificia Universidad Catolica de Chile (PUC), Santiago, Chile; Vienna University of Economics and Business Administration, Vienna, Austria; and Yonsei University, Seoul, Korea.

Centers of Excellence

The mission of the **Don Beall Center for Innovation and Entrepreneurship** is to provide thought leadership in the emerging science of innovation research, education, and consulting, with the belief that strategic innovation will be the first and best alternative for sustaining competitive advantage in today's global economy. The Beall Center will be the vehicle through which a significant proportion of research and thought leadership on the newest and most influential approaches to strategic innovation and entrepreneurship will be completed and disseminated to global business. In addition, the Beall Center will provide education and opportunities for graduate students and researchers to understand the process of innovation and benefit from the many programs available to enhance the process of successfully launching a business in today's competitive environment.

The **Center for Leadership and Team Development** is an important resource for UC Irvine and The Paul Merage School of Business students. The Center offers various courses, co-curricular programs, and events to explore ideas and develop partnerships with other students, faculty members, corporate professionals, and nonprofit entities. The Center's co-curricular programs facilitate the leadership development of M.B.A. students through two flagship programs, the Executive Mentoring Program and the Social Responsibility Initiative. Both programs connect students with key professionals in the industry to learn through reflection, through practice, and through relationship building. The Distinguished Speakers Series (DSS), the largest event hosted by the Center, involves approximately 250 corporate professionals, community leaders, faculty members, staff, and students and provides an important way to exchange ideas, connect to corporate professionals, and network.

The **Center for Real Estate** at The Paul Merage School of Business is an integral and indispensable component of the program in Real Estate and Urban Development at UC Irvine. Starting in 2003, serious discussion began at the School about the need for the development of a comprehensive professional and academic program in real estate. Immediately apparent was the need for a Center of Excellence that would provide a binding force among the three primary missions of the proposed program: student education, academic research, and professional outreach. The Center for Real Estate is the realized product of that dialogue and is formally organized as one of the six current Centers of Excellence within The Paul Merage School of Business.

The **Center for Health Care Management and Policy** at The Paul Merage School of Business advances knowledge through research and education while providing forums for dialogue on crucial challenges and concerns facing the nation's health care system today. This interdisciplinary research institute brings together health care scholars, policy experts, and industry professionals to share vital information and a range of perspectives on such fundamental issues as quality of care, cost, and access. A wide range of programs contribute to the debate on national health care policy and help leaders in government, business, and nonprofit organizations make better-informed decisions. The Center's activities build on the Merage School's health care-oriented educational programs, including its nationally acclaimed Health Care Executive M.B.A. program and its M.D./M.B.A. joint degree program.

The **Center for Research on Information Technology and Organizations (CRITO),** a UC Irvine Organized Research Unit, is one of the world's leading think tanks on the impact of information technology on organizations and society, and on the management of information technology. CRITO has a rich tradition of studying the impacts of information technology (IT) on organizations and society that stretches back more than two decades. It is home to well over a dozen internationally recognized experts in the fields of management, computer science, and social science, often bringing the advantages of multidisciplinary perspectives to the problems at hand. Researchers focus on the Management of Information Systems, the IT-Enabled Enterprise, Community-Based Technologies, and IT Industry Studies. They have been consultants to international corporations and government agencies, have published over a dozen books, and have won numerous major awards for excellence in their fields. CRITO conducts both academic and applied research.

The **Center for Investment and Wealth Management** is dedicated to the mission of educating Merage School M.B.A. students in the area of investment and wealth management. The Center seeks to enhance students' educational experience and help them to advance their professional expertise and growth at the same time. The education that the Center provides is a collaborative effort between UC Irvine's expert faculty and seasoned professionals dedicated to sharing their experience and knowledge. The concept is to create cutting-edge curriculum with the flexibility to teach students topics in real time. This year, a number of the Center's board members have participated as distinguished lecturers. They are prominently known in the wealth management community and speak to students about their career path, the industry, and ways to achieve success. They are from a wide array of backgrounds including financial institutions, investment companies, law firms, accounting firms, and wealth management companies in Orange County and beyond.

M.B.A. Career Center

The M.B.A. Career Center, located within the School, was established to serve the unique placement needs of M.B.A. students and alumni. It has two main functions: (1) attracting a variety of organizations to interview and hire graduates and (2) counseling students in career opportunities and the techniques necessary to conduct effective job searches, not only for their first jobs but throughout their careers. The relatively small size of the M.B.A. program allows considerable interaction between the Career Center and students.

EXECUTIVE M.B.A. PROGRAM

The Executive M.B.A. (EMBA) program presents a challenging 21-month course of study specifically designed for executives, senior managers, professionals, entrepreneurs, and technical experts throughout Southern California. Participants have significant work experience (with a minimum of of eight years), demonstrated leadership abilities, and a proven track record of success. Commencing each fall, students meet for seven consecutive quarters on alternate weekends (Friday and Saturday) at The Paul Merage School of Business. Class size allows students the opportunity to actively participate in class discussions and interact closely with their peers.

The program offers an applications-oriented curriculum with an international focus designed to give the working professional contemporary management tools for successfully doing business in a domestic and global environment. The EMBA program is a 92-unit program and offers a maximum amount of core and elective course material presented in an accelerated timetable and is delivered to students using a lock-step curricular model.

In addition to the two, week-long residentials, students participate in an in-depth academic, week-long international seminar abroad.

This provides a unique opportunity to experience global business firsthand from a corporate, academic, and cultural standpoint.

Further information may be obtained by contacting the University of California, Irvine, Executive M.B.A. Programs, 230 School of Business, Irvine, CA 92697-3130; (949) 824-0561; http://www.merage.uci.edu/ExecutiveMBA.

HEALTH CARE EXECUTIVE M.B.A. PROGRAM

The Health Care Executive M.B.A. (HCEMBA) program is a comprehensive academic experience for individuals working in the health care industry. This unique program is designed for professionals who want to expand their business expertise and gain the fundamentals of management as well as develop a better understanding of the economic, political, and social dynamics which shape the global health care industry. Students come from the intersecting industries of pharmaceuticals, medical devices, managed care, insurance, health care services, and health care policy. Participants have significant relevant work experience, demonstrated leadership abilities, and a proven track record of success. This 24-month program begins each fall. Classes meet one weekend a month, starting Thursday evening and continuing until noon on Sunday. Classes meet for eight consecutive quarters at The Paul Merage School of Business.

The curriculum is a carefully structured program that assures each student exposure to the full range of disciplines which are essential components of a management education. The core and elective courses are specifically customized for application to a health care professional's daily challenges. Distinguished speakers from the industry are an integral part of the program. This activity has been approved for Continuing Medical Education (CME) credit.

In addition to two, week-long residentials, students participate in an in-depth academic, week-long seminar where they meet health care industry leaders to better understand legislative and regulatory processes that effect health care.

Further information may be obtained by contacting the University of California, Irvine, Executive M.B.A. Programs, 230 School of Business, Irvine, CA 92697-3130; (949) 824-0561; http://www.merage.uci.edu/HealthcareExecutiveMBA.

FULLY EMPLOYED M.B.A. PROGRAM

The Fully Employed M.B.A. (FEMBA) program gives emerging managers an opportunity to earn an M.B.A. degree with minimal disruption to their professional lives. Students attend classes on weeknights and/or Saturdays during the program. The FEMBA Program admits new students for enrollment in spring or fall. Students beginning the program in spring attend classes nine consecutive quarters and complete the program in 27 months. Students beginning the program in fall attend classes nine non-consecutive quarters (summers off) and complete the program in 33 months.

The program consists of both core courses and electives, allowing students to establish a solid foundation of traditional business skills and then customize their education based on personal interests and goals. The curriculum provides constant interaction between information presented in the classroom and what is being used on the job, reinforcing and enhancing the student's learning experience.

In addition to classroom work, students attend three residential sessions including one abroad focusing on global markets. In this concentrated setting, students and faculty have an opportunity to explore in depth a variety of business challenges and how those challenges can best be met using contemporary management tools.

Further information may be obtained by contacting the University of California, Irvine, Fully Employed M.B.A. Program Office, 202 School of Business, Irvine, CA 92697-3125; (949) 824-4565; http://www.merage.uci.edu/.

Courses in Management

(Schedule of Classes **designation: Mgmt)**

UNDERGRADUATE

5 Managing in Contemporary Organizations (4). Equips students with working knowledge of several major subject areas within the context of business and society studies. Topics include: role of management in organizations, corporate social responsibility and responsiveness, ethics and values in business, government regulation, and international business.

6 Introduction to Business (4). Introduction to the study of modern business enterprise, including a broad exposure to areas of study, vocabulary, and careers. Exposure to faculty from the area of Marketing, IS, Economics, Accounting, Finance, Operations and Decision Technologies, and Organization and Strategy.

7 Statistics for Business Decision Making (4). Basics of data analysis and the fundamental notion of statistical inference emphasizing applications to administrative and management decision problems. Classical estimation and hypotheses testing, regression, correlation, analysis of variance, nonparametric methods and statistical probability. Only one course from Management 7, Mathematics 7/Statistics 7, Statistics 8, or Biological Sciences 7 may be taken for credit. No credit for Management 7 if taken after Mathematics 67. No credit for Management 7 if taken after Economics 15A-B. Management 7 may not be used to substitute for Economics 15A-B. **(V)**

10 Business and Management in the World Today (4). Accounting scandals, e-commerce, and globalization are only a few examples that show the profound impact of business practices on individuals and on society at large. Provides students with a broad overview of business functions and management practices.

30A Principles of Accounting I (4). First in a series of two introductory-level courses in accounting theory and practice. Emphasis on financial accounting concepts including the corporate financial statements, their content and interpretation, and the impact of financial transactions upon them. Management 30A and Economics 25 may not both be taken for credit.

30B Principles of Accounting II (4). Second in a two-course series. Continuation of financial accounting concepts and introduction of managerial accounting concepts. Managerial accounting topics include product costing and decision making. Prerequisite: Management 30A. Management 30B and Economics 26A may not both be taken for credit.

101 Management Science (4). Concepts and methods of management science, which applies mathematical modeling and analysis to management problems. Topics include linear and integer programming, project scheduling, inventory management, queuing analysis, decision analysis, and simulation. Prerequisite: Management 7.

102 Managing Organizational Behavior (4). Basic theory and concepts which provide the manager with tools for understanding behavior of people in organizations. Areas such as individual, group, and organizational determinants. Prerequisite: Management 5 is recommended.

105 Introduction to Marketing (4). Basic marketing concepts; discussion of the role marketing plays in modern society. Topics: industrial and consumer marketing, promotion, distribution, and pricing theory.

107 Introduction to Management Information Systems (4). Provides exposure to the major features and issues relating to the deployment, use, and impact of information technology within public and private organizations. Topics include selection and feasibility assessment of information technology (IT), application of IT to business, and design and implementation of IT.

109 Introduction to Managerial Finance (4). Basics of financial administration. Capital budgeting, cost of capital, cash budgeting, working capital management, and long-term sources of funds. Provides a basic understanding of issues and techniques involved in financial decision making. Prerequisites: Mathematics 2B and Management 30A. Management 109 and Economics 134A may not both be taken for credit. Formerly Management 186.

110 Strategic Management (4). Addresses management of the entire business. Role of the general manager in organizations, industry analysis, core competencies, growth through vertical integration, innovation, acquisition and diversification, globalization, strategy implementation and the ethical and moral responsibilities of a manager. Prerequisites: Management 102, 105, and 109. Management 110 and Economics 147B may not both be taken for credit.

119 Global Strategies (4). Examines the phenomena of technology and globalization and the impact on global business strategy. Macro approach considers the implications for the development of flexible yet focused business strategy and the creative and agile execution of policies. Class discussions are stimulated by case analyses. Prerequisite: Management 102.

121 Global Collaboration (4). Working in collaborations requires skills in cross-cultural communication, technology use, and dynamic planning and design. Understanding of the components that comprise global collaborations, including learning to identify key factors that influence performance. Prerequisite: Management 102.

122 Communication in Organizations (4). Addressing communication at three levels—interpersonal, group/meeting, and organizational. Dealing with conflict, interpersonal problems, being effective in meetings, and getting your message heard. Experiential course. Prerequisite: Management 102.

123 Critical Thinking and Creativity in Organizational Problem Solving (4). Learn about your own thinking process; develop the ability to think both logically and creatively and to understand how emotions affect your thinking. Class sessions involve discussion and experiential exercises. Business problems and issues are used for discussion and exercises. Prerequisite: Management 102.

125 Negotiations (4). Negotiating well is a skill. The objective is to assist students in developing an understanding of different theoretical perspectives. Exploration of feelings and beliefs about negotiation, negotiation skills, and putting theory into action by practicing new negotiation skills. Prerequisite: Management 102.

128 International Management (4). Impact of different cultures and political/economic systems on assumptions, expectations, and organizational practices relevant to conducting business in different national settings. Understanding of the challenges of cross-national management and resources utilized to work and conduct business outside the United States. Prerequisite: Management 102.

129 Leadership (4). Challenges facing today's leaders. Case analyses, free-form discussion, and written assignments designed to develop critical thinking skills. Experiential exercises encourage students to develop their ability to risk innovation, foster collaboration, manage conflict, and value diversity. Prerequisite: Management 102.

131A Intermediate Accounting I (4). First in a series of two intermediate-level courses in financial accounting theory and practice. Concepts include valuation and reporting of current and long-term assets, current liabilities and contingencies, and revenue recognition issues. Prerequisites: Management 30A and 30B.

131B Intermediate Accounting II (4). Second in a two-course series. Topics include the recognition and valuation of long-term liabilities, accounting for stockholders' equity, and the Statement of Cash Flows. Prerequisite: Management 131A.

132 Individual Taxation (4). Fundamentals of federal income taxation pertaining to individuals. Topics include income, deductions, credits, property transactions, and the impact of taxes on business and investment decisions. Prerequisite: Management 30B.

132B Special Topics in Taxation (4). Taxation topics of particular interest to undergraduate students. Content may vary each quarter depending on the interests of the instructors and the students. Prerequisite: Management 132. May be repeated for credit as topics vary.

133 Corporate and Partnership Taxation (4). A study of the federal income taxation of partnerships and corporations, including subchapter S corporations. Emphasis on the tax issues associated with formation, operation, and termination of these entities. Prerequisite: Management 132.

135 International Accounting (4). Introduces the international dimensions of financial statement analysis; examines differences in measurement and disclosure practices that exist internationally, the reasons for these differences, their resultant financial statement effects, and methods that analysts and financial mangers can use to deal with such differences. Prerequisites: Management 30A and 30B.

136 Accounting Information Systems and Spreadsheets (4). Fundamentals of accounting information systems including internal controls and transaction processing cycles. Development of efficient spreadsheets as applied to financial and managerial accounting concepts. Prerequisite: Management 30B.

137 Advanced Accounting (4). Accounting theory and practice with emphasis on business combinations, consolidated financial statements, foreign exchange transactions, and governmental and nonprofit organizations. Prerequisite: Management 131B.

138 Auditing (4). An introduction to auditing practice with emphasis on the verification of financial statements and related information. Topics include professional ethics, assessment of audit risk, study and evaluation of internal control, gathering and evaluating audit evidence, and audit reporting. Prerequisite: Management 131B.

141 Investments (4). Foundations of investment management. Theory and empirical evidence related to portfolio theory, market efficiency, asset pricing models, factor models, and option pricing theory. Students are expected to combine market research results and electronic information sources to create optimal investment strategies. Prerequisite: Management 109. Management 141 and Economics 132A may not both be taken for credit.

144 Multinational Finances (4). Focuses on financial issues facing multinational corporations, the most important of which is the management of foreign exchange risk. Introduction to investments and financing decisions in international capital markets. Prerequisites: Management 109, Economics 20A-B.

147 Case Studies in Corporate Finance (4). A case study course using the principles of financial value creation for optimum performance. Introduction to venture capital, IPOs, real options, mergers and acquisition, stock buybacks, dividends, and recapitalizations. Prerequisite: Management 109.

149 Derivatives (4). Introduction to options, futures, and other derivatives. First covers forward, futures, and swaps, and then examines the pricing of options. Applications of these instruments are emphasized. Prerequisite: Management 109.

150 Consumer Behavior (4). Application of the behavioral sciences to understanding buyer behavior. Topics include perception, memory, affect, learning, persuasion, motivation, behavioral decision theory, social and cultural influences, and managerial implications. Prerequisite: Management 105.

151 Marketing Research (4). Research to aid managerial decisions for products and services; problem formulation, research design, data collection, sampling, statistical analyses, managerial recommendations, and implementation in several real-world settings. Prerequisite: Management 105.

152 New Product Development (4). Identifying markets, developing product ideas, measuring consumer preferences, positioning and designing products, and forecasting their sales. Hands-on experience with software to conduct various analyses useful in new product development, such as cluster analysis, factor analysis, and conjoint analysis. Prerequisite: Management 105.

153 Integrated Marketing Communication (4). Management of the communication aspect of marketing strategy. Emphasis on emotional experiences, persuasive appeals, sales promotion, public relations, and direct marketing. Topics include setting communications objectives and budgets, media selection, creative strategy, and sales promotion techniques. Prerequisite: Management 101.

154 International Marketing (4). Students are exposed to the challenges and opportunities facing marketers in the international marketplace. Special attention is given to the management of cultural differences in product development, distribution systems, pricing, and promotion. Prerequisite: Management 105.

155 Brand Management (4). Introduction to issues in planning, implementing, and evaluating brand strategies, relevant theories, models, and tools for the making of brand decisions; application of these principles. Prerequisite: Management 105.

157 Marketing on the Internet (4). Recent developments in interactive technologies indicate that "marketing on the Internet" is becoming a serious business activity, with exponential growth. How to do marketing on the Internet and to identify the key issues pertaining to the marketing process. Prerequisite: Management 105.

158 Micromarketing (4). Develop marketing plans for specific retail locations and neighborhoods based on past purchases and demographics. Retail site selection, product category management, promotion management, shelf space allocation, targeted advertising. Hands-on experience with Retail Sales Analysis and Geographic Information Systems software. Prerequisite: Management 105.

159 Design Management (4). Design of products and services, particularly in consumer- and technology-oriented industries where design is viewed as a strategic resource. User-oriented design, design as a strategic tool, the role of design aesthetics, and the management of design. Prerequisite: Management 105.

160 Introduction to Business and Government (4). Introduces undergraduate students to the study of public administration. Designed for those expecting to take further courses in the field or considering a public service career. Prerequisites: Management 5 and upper-division standing.

161 Managing the Business Cycle for Competitive Advantage (4). Countercyclical strategies and tactics that can be implemented over the course of the business cycle in areas ranging from marketing, human resource management, and production to M&A activity and acquisitions/divestitures. Forecasting methods, tools and business cycle dynamics. Prerequisites: Economics 20A-B.

162 Managing Nonprofits (4). Designed for students interested in the management of nonprofit organizations. Examines similarities and differences between for-profit and nonprofit organizations, major management issues specifically associated with nonprofits, and exposes students to career opportunities in the nonprofit sector.

163 Parsing the China Price (4). Examines the ability of Chinese manufacturers to produce at substantially lower costs. Elements include low wage costs, lax environmental and safety regulations, economies of scope and scale driven by geographical considerations, counterfeiting and piracy, subsidies, and protectionism. Prerequisites: Economics 20A-B.

164 Human Resources and Public Policy (4). Examines the government's growing influence on the workplace and the impact of public policy on the management of human resources. Examples include policies pertaining to wages, hours, and family/medical leave; and labor/management relations and collective bargaining policies. Prerequisites: Economics 20A-B.

168 Economics of Strategy (4). Applies key concepts of game theory to the analysis of the strategic behavior of profit-maximizing firms. Simultaneous move games, sequential games, credibility and commitment, repeated games, pure and mixed strategies, signaling, and screening. Lecture and problem sets. Groups projects. Prerequisites: Economics 20A-B. Management 168 and Economics 147B may not both be taken for credit.

169 Applied Econometrics for Business (4). Bridge between an introductory statistics course and a course in econometrics. Oriented toward the ways in which economists use data to motivate and test economic theories. How to locate economics data, analyze, and appropriately interpret these data. Prerequisites: Economics 20A-B.

170 Technologies for Business (4). Introductory course that includes hands-on exposure to powerful, high-level tools for using computers in business situations more effectively. Next-generation graphical user interfaces, Internet applications, client/server technology, information security, and wireless. Prerequisite: Management 107.

173 Business Intelligence (BI) for Analytical Decisions (4). BI from both managerial and technical perspectives. Strategic role of BI. Software tools coupled with case studies are used to show how leading companies are using BI technologies to turn complex data into business decisions. Prerequisite: Management 107.

174 Database Management and Applications (4). Query, manipulate, and understand data and learn about leading edge applications for databases. Database fundamentals including entity relationship design, creating database tables, normalization, and data querying. Contemporary applications of databases using case studies. Applications include data warehousing, data mining. Prerequisite: Management 107.

175 Information Technology (IT) and Strategy (4). Strategic and competitive uses of IT and the Internet. Globalization and firm competition; alignment of IT with business strategy; business value of IT; business transformation with IT; implications of offshoring and outsourcing; strategy and IT in the Internet era. Prerequisite: Management 107.

178 Management of Information Technology (4). Analysis and design of business information systems and IT project management. Various phases of software development life cycle are examined from identification and selection of projects to rapid prototyping to training and maintenance. Automated tools for software development and project management. Prerequisite: Management 107.

179 Business Data Communications and Security (4). Analysis, technology integration, and technology choices involved with deploying, managing, and securing effective data communications systems, local area networks, Internet, intranet, and wide area networks. Fundamental concepts, as well as new enabling technologies that can provide a strategic advantage to firms. Prerequisite: Management 107.

180 Business Forecasting (4). Forecasts are critical inputs into the wide range of business decision making. Users include accountants, financial experts, human resource managers, production.managers, and marketing people. Methodologies used to support business decision making. Computer-oriented approach. Prerequisite: Management 101. Management 180 and Economics 125 may not both be taken for credit.

182 Supply Chain Management (4). Flows of materials and information among all of the firms that contribute to a product or service. Forecasting, demand management, logistical networks, inventory management, supplier contracting, sourcing, information technology, flexibility, globalization, and performance management. Prerequisite: Management 101.

184 Optimization in Management (4). Firms attempt to maximize profit or minimize cost. Linear, integer, and nonlinear programming models in functional areas of business such as finance, marketing, and operations. Solutions via computer and the interpretation of output in a managerially significant way. Prerequisite: Management 101.

185 Introduction to Financial Accounting (4). Acquisition, reporting, and use of financial information in a business organization. Emphasis on use of information generated by the accounting system for decision making, planning, and control. Public sector analogies considered wherever possible. Prerequisites: Management 5 and upper-division standing.

189 Operations Management (4). Managing the productive resources, from which raw materials as inputs are being transformed into useful outputs of final products and services. Explanation of issues pertaining to both manufacturing and services-oriented systems. Prerequisite: Management 101.

190 Special Topics in Management (4). Special topics courses are offered from time to time, but not on a regular basis. Prerequisites vary. May be repeated for credit as topics vary.

191 Business Communication (4). Provides students with a solid foundation in business communication. Emphasis is placed on improving students' written and oral communication skills to help them succeed in (1) upper-division Business Administration courses, (2) graduate school, and (3) work and career activities. Prerequisite: satisfactory completion of the lower-division writing requirement.

192 Business Law (4). A study of the legal environment of business. Topics include contracts, agency, partnerships, corporations, and other basic principles of law as they relate to business transactions.

193 The Ethical Environment of Business (4). The political, social, and ethical environment of business. Topics include the historical development of American business, competitiveness problems, corporate social responsibility, corporate governance, and government regulation of business.

194 Financial Statement Analysis (4). Study of financial statements and their related footnotes; tools and procedures common to financial statement analysis; the relationships among business transactions, environmental forces (political, economic, social), and reported financial statement information; how financial statement information can help solve certain business problems. Prerequisites: Management 30A and 30B.

195 Strategic Cost Management and Management Control (4). Study of cost management to strengthen an organization's strategic position; preparation and use of relevant information for management decision making; management control systems design and performance evaluation. Prerequisites: Management 30A and 30B.

196 Decision Analysis (4). Making good decisions fast is important in a world where information is ubiquitous and technologies change at an incredible pace. Conceptual framework and information technology tools to approach these situations with clarity and confidence and improve both professional and personal decision-making skills. Prerequisite: Management 101.

197 Probability Models in Management (4). Probability models that characterize random phenomena in real-world applications. Applications of these probability models to business disciplines including operations management and finance. Discrete-time Markov chains, Poisson processes, birth and death processes, queuing models, and random walk. Prerequisite: Management 101.

198A-B-C Administrative Internship (4-4-4). Selected undergraduates participate as interns in three-quarter seminar. Students serve as managers within administrative units on campus with course work complementing the intern experience. Topics include: management ethics, study of non- and for-profit institutions, and changing nature of the work force.

199 Independent Study (1 to 4). Individual study under the direction of a selected faculty member. Prerequisite: consent of instructor. May be repeated for credit.

FULL-TIME M.B.A. PROGRAM

***(Schedule of Classes* designation: MgmtMBA)**

MBA200 Management of Complex Organizations (4). An introduction to management. In learning about the job of the manager, students examine some of the basic concepts of strategic and organizational management, including competitive analysis, corporate strategy, organizational design, and techniques for improving organizational effectiveness. Satisfactory/Unsatisfactory only.

MBA201A Statistics for Management (4). Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting. Prerequisite: basic statistics with probability.

MBA201B Management Science (2). An introduction to computer-based models for decision making. Topics include optimization (linear programming, integer programming, network flow models) and computer simulation. Uses spreadsheets extensively, including Excel built-in and add-in packages.

MBA202 Organizational Analysis for Management (4). Develops a better understanding of the causes and consequences of individual and group behavior, and the frameworks by which to analyze and understand complex organizations; and enhances the skills required to manage and lead an organization.

MBA203A Financial Accounting for Management (4). Nature and purpose of accounting, principal accounting instruments, and valuation problems.

MBA203B Managerial Accounting for Management (4). Involves developing and using financial and non-financial information to help organizations make planning, budgeting, control, operating, and performance evaluation decisions. Prerequisite: Management MBA203A.

MBA204A Microeconomics for Management (4). Provides basic tools for analyzing economic decisions of consumers and firms, the determinants and consequences of market structure and market failure. Topics include demand and supply analysis, production and cost theory, perfect competition, monopoly, and introductory game theory.

MBA204B Macroeconomics for Management (4). Focuses on the use of macroeconomic analysis to manage the business cycle for competitive advantage. Such "business cycle-sensitive" management is explored within the context of marketing, operations management, HRM, merger and acquisition activity, and capital financing and expenditures. Prerequisite: Management MBA204A.

MBA205 Marketing Management (4). Introduction to the field of marketing. Objectives include developing familiarity with fundamental concepts, theories, and techniques in marketing and acquainting students with the type of decisions made by marketing managers including customer targeting, product, pricing, distribution, promotion, and research.

MBA206 Business and Government (4). Introduces students to the many non-market issues that affect today's managers, such as: environment protection, health and safety, intellectual property protection, antitrust, and lobbying. Takes an interdisciplinary approach using economics, political science, public policy and law.

MBA207 Information Technology for Management (4). Focuses on the technological and managerial issues surrounding the development and use of IT in organizations. Examines role of technology in organizations, how technology can be used to execute an organization's business strategy, and to enable new, innovative business strategies.

MBA208 Operations Management (4). Introduction to strategic and tactical issues in production and operations management. A blend of quantitative and qualitative considerations. Topics: product planning, process design, capacity management, production planning, inventory control, distribution management, just-in-time manufacturing, quality management.

MBA209A Managerial Finance (4). Introduces students to financial theory and concepts. The main topics covered are time value of money, valuation of stocks and bonds, capital budgeting, portfolio theory, capital structure choice. Prerequisites: Management MBA201A, MBA203A, MBA204A.

MBA210 Business Strategy (4). The study of the functions and responsibilities of senior management and the decisions that determine the direction of the organization and shape its future. Methods include application of concepts, frameworks, and analytical techniques to the strategic issues which real-world companies face. Prerequisites: Management MBA202, MBA205, MBA209A.

ELECTIVES

MBA209B Investments (4). Foundations of investment management. Theory and empirical evidence related to portfolio theory, market efficiency, asset pricing models, factor models, and option pricing theory. Students are expected to combine market research results and electronic information sources to create optimal investment strategies. Prerequisite: Management MBA209A.

MBA211 M.B.A. Proseminar (0). Provides students in the Merage School full-time M.B.A. program with information and practical skills for success in the program and for business career planning.

MBA213 New Venture Management: A Course in Entrepreneurship (4). Focuses on survival and growth of new ventures. Methods include analysis of live cases, guest speakers, discussion, and field projects with contemporary entrepreneurs to learn about successful new venture management and surviving the liabilities of newness. Prerequisites: Management MBA202 and MBA205.

MBA218 Business Dynamics (4). Addresses how managers can successfully face the continuous challenges to their survival in a time-efficient, strategically sound manner. Builds on the core strategy course by tackling an extended range of strategic responses to dynamic and competitive environments. Prerequisites: Management MBA200, MBA202, MBA210.

MBA220 Organizational Change (4). Focuses in the implementation of change. Focus is on identifying the features of successful change in organizations of varying sizes and configurations, with an emphasis on the reasons why individuals resist or embrace change. Prerequisites: Management MBA200, MBA202.

MBA225 Negotiations (4). Using a combination of theory and practice via negotiation simulations, students expand their repertoire of negotiating skills and develop their ability to analyze different negotiation situations and contexts. Prerequisites: Management MBA200, MBA202.

MBA228 International Management (4). Introduction to the effects of different national cultures and political/economic systems on the assumptions, expectations, organizational practices, and organizational forms relevant to cross-national organizational work. Prerequisites: Management MBA200, MBA202.

MBA229 Leadership Strategies (4). Provides insights/perspectives about the study and development of leadership. Helps students answer three questions: Where am I currently as a leader? What tools can I use to improve my leadership? What is my plan for the future as a leader? Prerequisites: Management MBA200, MBA202.

MBA231A FSA-Earnings Quality and Asset Analysis (4). Develops an initial set of skills essential to using financial statements for business analysis by examining earnings management, revenue recognition, the reporting of assets, and how financial reporting is related to the business environment and managerial incentives. Prerequisite: Management MBA203A.

MBA231B FSA-Liability and Equity Analysis (4). Extends financial statement analysis to the reporting of liabilities and stockholders' equity and their interaction with managerial incentives and the business environment. Useful to anyone with interests in equity, business, or financial analysis, investment and commercial banking, accounting, consulting. Prerequisite: Management MBA231A.

MBA234 Financial Statement Analysis (4). Develops an initial set of skills essential to using financial statements for business analysis. Topics include financial information "quality," earnings management, revenue recognition, forecasting financial information, and equity valuation. Prerequisite: Management MBA203A.

MBA235 Advanced Managerial Accounting (4). Design of cost information and systems used to plan and control organizational activities; procedures used to account for unit, process, and program costs; cybernetic evaluation of costing procedures; cost estimation, analysis, and accounting via computers.

MBA236 Accounting Control and Corporate Governance (4). Equips M.B.A. students with skills to deal with the challenges and opportunities organizations face in dealing with the separation of ownership and control.

MBA243 Bonds and Fixed Income (4). During the past decade, there has been a tremendous amount of innovation in the design and use of debt securities. Focuses on techniques and methodologies for valuing different types of debt as well as their uses. Prerequisite: Management MBA209B.

MBA244 Multinational Finance (4). Focuses on financial issues facing multinational corporations, the most important of which is the management of foreign exchange risk. Other topics covered are investments and financing decisions in international capital markets. Prerequisites: Management MBA201B, MBA204B, MBA209A, MBA209B, or consent of instructor.

MBA246A Introduction to the Real Estate Process (4). Introductory survey course providing an understanding of the real estate market. Topics include real estate economics, valuation, feasibility, investment, tax considerations, financing, development and corporate real estate asset management. Hands-on lectures, with guest lectures by real estate professionals.

MBA246C Real Estate Capital Markets (4). Understanding the four sectors of real estate capital markets: public debt, private debt, public equity, private equity; fundamental drivers of real estate investment, key players, investment types drive capital solutions, underwriting strategies and vehicle structuring, debts vs. equity source characteristics and implications for returns.

MBA246D The Real Estate Development Process (4). Nature and composition of development community and development process. Emphasis on role of conflicting interests, values and goals, and market uncertainty. Special attention paid to deal structuring and risk management. Lectures, guest lectures, team projects evaluating actual development project.

MBA246E Mortgage-Backed Securities and Structured Debt (4). Theory and operation of the mortgage-backed securities market. Historical introduction, technical analysis, examination of operations of residential/commercial mortgage-backed securities markets (RMBS, CMBS), evaluations of the "buy side," mezzanine financing, CDOs, related vehicles. Guest lecturers from industry supplement lectures.

MBA246F Seminar in Management of the Real Estate Enterprise (4). Beyond "The Deal" to management of the real estate enterprise itself. Explores aspects of decision-making focused upon strategic objectives: goal setting, legal/tax structures, family-owned firms, going public, corporate ethics, capital structure, diversification, core competencies, technology. Guest professionals.

MBA246G Applied Real Estate Security Analysis and Portfolio Management (4). Provides an understanding of the public REIT market and its place in modern investment strategies, presents methods for analyzing and valuing companies, and introduces basic concepts for constructing and managing a real estate investment portfolio.

MBA248 Corporate Valuation (4). Combination of lectures and cases designed to confront students with real-world problems. Expands concepts covered in the introductory corporate finance course and focuses on estimating the value of firms and projects in diverse settings. Prerequisite: Management MBA209B.

MBA249 Derivatives (4). Studies options, futures, and other derivatives. The first part covers forward, futures, and swaps. The second part examines the pricing of options. Applications of these instruments are emphasized. Prerequisite: Management MBA209B.

MBA250 Consumer Behavior (4). Examines consumer decision-making process with emphasis on application of concepts and research findings from behavioral sciences for solution of marketing problems. Includes models of consumer decision making, information processing theories, and sociological influences on consumer decision making. Prerequisite: Management MBA205.

MBA251A Marketing Research (4). Covers conducting marketing research to generate customer insights that will drive sales, market share, and profitability and/or realize other quantitative objectives. Discusses problem formulation, data collection, statistical analyses, formulating managerial recommendations, implementation, and how research is used by companies. Prerequisite: Management MBA205.

MBA252A Advertising and Communications Management (4). Covers integrated marketing communications which includes advertising, sales promotions, public relations, and direct mail. Topics include elements of a communications plan, marketing research including copy testing and tracking, creating brand value, media strategies, and measuring return on investment. Prerequisite: Management MBA205.

MBA252D New Product Development (4). Designed to introduce the new product development process and techniques to identify markets, develop new product ideas, measure consumer preferences, position and design new products, as well as test them prior to launch. Analytical thinking and techniques are emphasized. Prerequisite: Management MBA205.

MBA256 Design Management and Innovation (4). Presents a design-driven approach, from design as organizational vision to strategic innovation to managing the design process. Students are exposed to design fundamentals and work in teams that involve creativity workshops and real-world projects.

MBA257 Marketing on the Internet (4). Examines impact of the Internet on traditional methods of doing marketing, and explores its existing and future uses. Discusses how to capitalize on and increase the Internet's utility as a tool that can increase marketing effectiveness, efficiency, and competitiveness. Prerequisite: Management MBA205.

MBA258 Marketing Strategies for High Technology (4). Framework and tools for managing technology-intensive businesses. Product and pricing policies; network externalities; compatibility concerns; systems competition; technological and market uncertainty; technology licensing strategies; contracting in high-tech markets; product line design; product bundling strategies; usage-based pricing; pricing of networks. Prerequisite: Management MBA205.

MBA259 Strategic Brand Management (4). Addresses important branding decisions faced by organizations. A computer simulation allows students hands-on experience in making decisions about their brand and seeing the results of those decisions. Prerequisite: Management MBA205.

MBA262 Managing Nonprofits (4). Focuses on the similarities and differences between for-profit and nonprofit organizations, with emphasis on the management of nonprofits. Topics include: marketing, fundraising, staffing, management/director relationships, use of volunteers, and emerging career opportunities.

MBA264 U.S. Health Policy (4). Provides an overview of U.S. health policy with a particular emphasis on current policy developments and debates. Students are introduced to the basic tools of policy analysis and apply them to health policy issues.

MBA272 Critical IT Decisions for Business Executives (4). Develops frameworks to help business executives make critical IT decisions. Examples include how much to invest in IT, determining management practices to maximize return on IT investment, sourcing strategies for IT and business process outsourcing, strategies for digital environments. Prerequisite: Management MBA207.

MBA274 Database Management and Strategic Applications (4). Examines contemporary business applications of databases including CRM, knowledge management, data-warehousing, data-mining, and business intelligence. Also covers the database design process with a focus on enabling business decision making including capturing the linkages among data and retrieving data. Prerequisite: Management MBA207.

MBA280 Forecasting (4). Basic theory and techniques used to forecast future activities in technological, economic, social, and political arenas. Impact of forecasting on managerial decision making.

MBA283 Decision Analysis (4). Models of preferences and uncertainty; exercises in creative problem solving. The assessment and use of preference models (von Neumann-Morgenstern expected utility and measurable value functions) for private, public, and not-for-profit decision making. The assessment and use of subjective probabilities in decision making.

MBA285 Supply Chain Management (4). Focuses on the effective coordination of materials, the role of information and technology, and channel conflicts in global supply chains. Recent innovations in global supply chain management are also discussed, including the impact of electronic commerce.

MBA286 Service Operations (4). Analyzes processes from a wide array of services to examine process structure, information and technology requirements, performance, and support of business objectives. Case intensive; cases include hotel, airline, e-commerce, fast food, entertainment, banking, and health care.

MBA290 Special Topic Seminars (2 to 4) F, W, S. Seminar, three hours. Each quarter a number of special topic seminars are offered in the 290 series. These seminars are not sequential and may be repeated for credit providing the topic varies. Examples of possible topics include Communication in Organizations, Power and Authority in Organizations, Health Care Administration, Real Estate Development. May be repeated for credit as topics vary.

MBA292 Business Law (4). Detailed study from a business viewpoint of contract theories, assignments, delegation of duties, third-party beneficiary contracts, defenses to consensual contracts, types of conditions, methods of excusing conditions, remedies, and types of damages.

MBA294 Special Topic ITM Seminars (2 to 4). Each quarter a number of topic Information Technology for Management (ITM) seminars are offered in the 294 series. Examples of possible topics include: Business Intelligence, Technologies for E-commerce. Open to Paul Merage School of Business students only. May be repeated for credit as topics vary.

MBA295B Micromarketing Lab (2). Develop marketing plans for retail locations and neighborhoods based on past purchases and demographics. Topics include retail site selection, targeted advertising, promotion management, and category management. Gain experience with Geographic Information System (GIS) software and retail sales (POS) analysis. Corequisite: Management MBA205.

MBA295D Operations Management Lab (2). Introduces students to some basic skills of modeling and analyzing business processes using commercial process modeling software. Through class projects, provides students with hands-on experience in building simulation models for improving operational performance of business processes. Corequisite: Management MBA208.

MBA298 Experiential Learning (4). Provides students the opportunity to put into practice concepts, skills, and tools acquired in other parts of the M.B.A. program. Seminars augment internship experiences with analyses of relevant administrative issues. Open only to second-year M.B.A. students.

PH.D. PROGRAM

(Schedule of Classes **designation: MgmtPhD),**

PHD227 Doctoral Seminar in Organizational Behavior (4). Examines recent research and literature in the field of organizational behavior. Open only to advanced Ph.D. students in organizational behavior and related areas.

PHD291 Ph.D. Special Topics Seminar (2 to 12). Each quarter a number of special topic seminars are offered in the 291 series for Ph.D. students. Examples include topics such as methods seminar, experimental design, qualitative research, structural equation modeling.

PHD297A Doctoral Proseminar (2 to 4). Analysis of the central theories and theoretical controversies in the field of management. Examination of the formal education for managerial careers and exploration of issues relating to professional careers in research and scholarship in the field of management. Satisfactory/Unsatisfactory only.

PHD297B University Teaching (0). Designed to prepare students for teaching career; incorporates seminars addressing topics of classroom dynamics, syllabus preparation, teaching techniques; establishes mentor relationship with faculty member in student's teaching area, provides classroom experience and includes option of videotape analysis of teaching style. Formerly PHD297G.

PHD297F Doctoral Research Methods for the Management and Business Social Sciences (4). An introduction to the fundamentals of social science research: theory development, research design, methods, data management, and writing for scholarly publications; for doctoral students intending scholarly research careers. Involves hands-on practice in formulating hypotheses, designing research, and conducting journal reviews. Formerly PHD297E.

PHD297G Qualitative Research (4). Focuses on qualitative research techniques for management. A hands-on course that includes in-depth/long interviews, visual research methods, participant/non-participant observation, verbal protocols, constructing field notes, multi-media approaches for data gathering and analyses.

PHD297H Experimental Design (4). Advanced course provides experience in planning and implementing an experiment or quasi-experiment, including choice of topic, study design, data analysis, and manuscript preparation. Data analysis topics include ANOVA, ANCOVA, repeated measures, logistic regression, chi-square, and tests of mediation.

PHD297I Applied Multivariate Statistics (2 to 4). Provides an overview of the most common techniques for multivariate analysis: principal component analysis, factor analysis, cluster analysis, MANOVA, regression with continuous variables, and regression with discrete variables.

PHD297J Applied Econometrics and Research Methods (2 to 4). Helps students to be more knowledgeable consumers and producers of empirical research. Reviews econometric techniques and research designs used by applied microeconomists. Attention to practical issues that arise when analyzing data.

PHD297S Information Economics and Business Applications (4). Designed to provide doctoral students in the Merage School with an overview of the basics of information economics, so the students can readily access the literature in their areas based on this key reference discipline.

PHD297T Decision Theory (2 to 4). Decision theories and preference models: How models are elicited or theories are experimentally tested, relevance to different management research areas, alternative theories, applications in management practice, and interpretations for the general public.

PHD297U Foundational Theories of Organizations (4). Covers major economic and sociological perspectives guiding the study of organizations (i.e., transaction cost economics, agency theory, institutional theories, organizational ecology, network and diffusion theories, behavioral theories, resource dependence), and examines how different theoretical perspectives are tested.

PHD299 Individual Directed Study (1 to 12). Individual study under the direction of a selected faculty member. Prerequisite: determined by instructor.

EXECUTIVE M.B.A. PROGRAM

(Schedule of Classes **designation: Mgmt EP)**

Admission to the Executive M.B.A. Program is a prerequisite for enrollment in the following courses.

EP200 Management of Complex Organizations (7). An introduction to management. In learning about the job of the manager, students examine some of the basic concepts of strategic and organizational management, including competitive analysis, corporate strategy, organizational design, and techniques for improving organizational effectiveness. Satisfactory/Unsatisfactory only.

EP201A Statistics for Management (5). Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

EP201B Management Science (5). Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

EP202 Organizational Analysis for Management (5). Develops a better understanding of the causes and consequences of individual and group behavior, and the frameworks by which to analyze and understand complex organizations; and enhances the skills required to manage and lead an organization.

EP203A Financial Accounting for Management (5). Nature and purpose of accounting, principal accounting instruments, and valuation problems. Satisfactory/Unsatisfactory only.

EP203B Managerial Accounting for Management (5). Involves developing and using financial and non-financial information to help organizations make planning, budgeting, control, operating, and performance evaluation decisions.

EP204A Microeconomics for Management (5). Provides basic tools for analyzing economic decisions of consumers and firms, the determinants and consequences of market structure and market failure. Topics include demand and supply analysis, production and cost theory, perfect competition, monopoly, and introductory game theory.

EP204B Macroeconomics for Management (5). Focuses on the use of macroeconomic analysis to manage the business cycle for competitive advantage. Such "business cycle-sensitive" management is explored within the context of marketing, operations management, HRM, merger and acquisition activity, and capital financing and expenditures. Prerequisite: Management EP204A.

EP205 Marketing Management (5). Introduction to the field of marketing. Objectives include developing familiarity with fundamental concepts, theories, and techniques in marketing and acquainting students with the type of decisions made by marketing managers including customer targeting, product, pricing, distribution, promotion, and research.

EP207 Information Technology for Management (5). Focuses on the technological and managerial issues surrounding the development and use of IT in organizations. Examines role of technology in organizations, how technology can be used to execute an organization's business strategy, and to enable new, innovative business strategies.

EP209A Managerial Finance (5). Introduces students to financial theory and concepts. The main topics covered are time value of money, valuation of stocks and bonds, capital budgeting, portfolio theory, capital structure choice. Prerequisites: Management EP201A, EP203A, EP204A.

EP210 Business Strategy (5). The study of the functions and responsibilities of senior management and the decisions that determine the direction of the organization and shape its future. Methods include application of concepts, frameworks, and analytical techniques to the strategic issues which real-world companies face. Prerequisites: Management EP202, EP205, EP209A.

NOTE: For course descriptions *not* shown below, refer to the corresponding course number in the Full-Time M.B.A. Program list.

EP213 New Venture Management: A Course in Entrepreneurship (5). Prerequisites: Management EP202, EP205, EP210.

EP215 Global Competitive Strategy (5). Prerequisites: Management EP202, EP205, EP210.

EP218 Business Dynamics (5). Prerequisites: Management EP200, EP202, EP210.

EP225 Negotiations (5). Prerequisites: Management EP200, EP202.

EP229 Leadership Strategies (5). Prerequisites: Management EP200, EP202.

EP234 Financial Statement Analysis (2 to 5).

EP248 Corporate Valuation (5). Prerequisite: Management EP209B.

EP259 Strategic Brand Management (5). Prerequisite: Management EP205.

EP283 Decision Analysis (5)

EP290A-H Special Topics (2 to 5). May be repeated for credit as topic varies.

EP294 Special Topic ITM Seminars (5). May be repeated for credit as topics vary.

EP295 Global Business (8). Emphasizes and reinforces international perspectives contained in the Executive M.B.A. program curriculum by providing a week-long intensive seminar abroad in the second year. Scholars and business people from the host country instruct students in specially designed class sessions and company visits.

EP296 Executive Leadership (7). Focuses on the conceptual, practical, and personal dimensions of executive leadership. Past and current leadership theories are addressed. Individual personal assessment and diagnosis.

EP299 Individual Study (1 to 8). Individual study under the direction of a selected faculty member. May be repeated for credit as topics vary.

HEALTH CARE EXECUTIVE M.B.A. PROGRAM

(Schedule of Classes **designation: Mgmt HC)**

Admission to the Health Care Executive M.B.A. Program is a prerequisite for enrollment in the following courses.

HC200 Management of Complex Organizations (7). An introduction to management. In learning about the job of the manager, students examine some of the basic concepts of strategic and organizational management, including competitive analysis, corporate strategy, organizational design, and techniques for improving organizational effectiveness. Satisfactory/Unsatisfactory only.

HC201A Statistics for Management (5). Methods of statistical inference, emphasizing applications to administrative and management health care decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

HC201B Management Science (5). Introduction to management science tools for aiding health care managerial decision making, with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

HC202 Organizational Analysis for Management (5). Develops a better understanding of the causes and consequences of individual and group behavior, and the frameworks by which to analyze and understand complex organizations; and enhances the skills required to manage and lead an organization.

HC203A Financial Accounting for Management (4). Nature and purpose of accounting, principal accounting instruments, and valuation problems as they apply to health care organizations.

HC203B Managerial Accounting for Management (5). Involves developing and using financial and non-financial information to help organizations make planning, budgeting, control, operating, and performance evaluation decisions.

HC204A Microeconomics for Management (5). Provides basic tools for analyzing economic decisions of consumers and firms, the determinants and consequences of market structure and market failure. Topics include demand and supply analysis, production and cost theory, perfect competition, monopoly, and introductory game theory.

HC204B Macroeconomics for Management (5). Focuses on the use of macroeconomic analysis to manage the business cycle for competitive advantage. Such "business cycle-sensitive" management is explored within the context of marketing, operations management, HRM, merger and acquisition activity, and capital financing and expenditures. Prerequisite: Management HC204A.

HC205 Marketing Management (5). Introduction to the field of marketing. Objectives include developing familiarity with fundamental concepts, theories, and techniques in marketing and acquainting students with the type of decisions made by marketing managers including customer targeting, product, pricing, distribution, promotion, and research.

HC206 Business and Government (2). Focuses on the relationship between business and government, and the ways in which members of the business community help shape local, state, and federal public policy. Topics include: issues management, lobbying, impact of technology, impact of the media, and privatization.

HC207 Information Technology for Management (5). Focuses on the technological and managerial issues surrounding the development and use of IT in organizations. Examines role of technology in organizations, how technology can be used to execute an organization's business strategy, and to enable new, innovative business strategies.

HC209A Managerial Finance (5). Introduces students to financial theory and concepts. The main topics covered are time value of money, valuation of stocks and bonds, capital budgeting, portfolio theory, capital structure choice. Prerequisites: Management HC201A, HC203A, HC204A.

HC209B Investments (3). Foundations of investment management. Theory and empirical evidence related to portfolio theory, market efficiency, asset pricing models, factor models, and option pricing theory. Students are expected to combine market research results and electronic information sources to create optimal investment strategies. Prerequisite: Management HC209A.

HC210 Business Strategy (5). The study of the functions and responsibilities of senior management and the decisions that determine the direction of the organization and shape its future. Methods include application of concepts, frameworks, and analytical techniques to the strategic issues which real-world companies face. Prerequisites: Management HC202, HC205, HC209A.

NOTE: For course descriptions *not* shown below, refer to the corresponding course number in the Full-Time M.B.A. Program list.

HC213 New Venture Management: A Course in Entrepreneurship (2 to 5). Prerequisites: Management HC202, HC205, HC210.

HC215 Global Competitive Strategy (5). Prerequisites: Management HC202, HC205, HC210.

HC218 Business Dynamics (2 to 5). Prerequisites: Management HC200, HC202, HC210.

HC225 Negotiations (2 to 5). Prerequisites: Management HC200, HC202.

HC234 Financial Statement Analysis (2 to 5). Prerequisite: Management HC203A.

HC246A Introduction to the Real Estate Process (2 to 5). May be repeated for credit as topics vary.

HC248 Creating Wealth (2 to 5). Prerequisite: Management HC209B.

HC259 Strategic Brand Management (3 to 5). Prerequisite: Management HC205.

HC283 Decision Analysis (2 to 5)

HC290 Special Topics (2 to 5). May be repeated for credit as topics vary.

HC294 Special Topic ITM Seminars (3 to 5). May be repeated for credit as topics vary.

HC295 Federal Policy in Health Care (8). National/international one-week residential course exploring political analysis as related to management of health care organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager.

HC296 Executive Leadership (7). Focuses on the conceptual, practical, and personal dimensions of executive leadership in health care. Past and current leadership theories are addressed. Individual personal assessment and diagnosis.

HC299 Individual Study (1 to 8). Individual study under the direction of a selected faculty member. May be repeated for credit as topics vary.

FULLY EMPLOYED M.B.A. PROGRAM

***(Schedule of Classes* designation: Mgmt FE)**

Admission to the Fully Employed M.B.A. Program is a prerequisite for enrollment in the following courses.

FE200 Management of Complex Organizations (6). An introduction to management. In learning about the job of the manager, students examine some of the basic concepts of strategic and organizational management, including competitive analysis, corporate strategy, organizational design, and techniques for improving organizational effectiveness. Satisfactory/Unsatisfactory only.

FE201A Statistics for Management (4). Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

FE201B Management Science (4). Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

FE202 Organizational Analysis for Management (4). Develops a better understanding of the causes and consequences of individual and group behavior, and the frameworks by which to analyze and understand complex organizations; and enhances the skills required to manage and lead an organization.

FE203A Financial Accounting for Management (4). Nature and purpose of accounting, principal accounting instruments, and valuation problems.

FE203B Managerial Accounting for Management (4). Involves developing and using financial and non-financial information to help organizations make planning, budgeting, control, operating, and performance evaluation decisions.

FE204A Microeconomics for Management (4). Provides basic tools for analyzing economic decisions of consumers and firms, the determinants and consequences of market structure and market failure. Topics include demand and supply analysis, production and cost theory, perfect competition, monopoly, and introductory game theory.

FE204B Macroeconomics for Management (4). Focuses on the use of macroeconomic analysis to manage the business cycle for competitive advantage. Such "business cycle-sensitive" management is explored within the context of marketing, operations management, HRM, merger and acquisition activity, and capital financing and expenditures. Prerequisite: Management FE204A.

FE205 Marketing Management (4). Introduction to the field of marketing. Objectives include developing familiarity with fundamental concepts, theories, and techniques in marketing and acquainting students with the type of decisions made by marketing managers including customer targeting, product, pricing, distribution, promotion, and research.

FE206 Business and Government (4). Introduces students to the many nonmarket issues that affect today's managers, such as: environmental protection, health and safety, intellectual property protection, antitrust, and lobbying. Takes an interdisciplinary approach using economics, political science, public policy, and law.

FE207 Information Technology for Management (4). Focuses on the technological and managerial issues surrounding the development and use of IT in organizations. Examines role of technology in organizations, how technology can be used to execute an organization's business strategy, and to enable new, innovative business strategies.

FE208 Operations Management (4). Introduction to strategic and tactical issues in production and operations management. A blend of quantitative and qualitative considerations. Topics: product planning, process design, capacity management, production planning, inventory control, distribution management, just-in-time manufacturing, quality management.

FE209A Managerial Finance (4). Introduces students to financial theory and concepts. The main topics covered are time value of money, valuation of stocks and bonds, capital budgeting, portfolio theory, capital structure choice. Prerequisites: Management FE201A, FE203A, FE204A.

FE209B Investments (4). Foundations of investment management. Theory and empirical evidence related to portfolio theory, market efficiency, asset pricing models, factor models, and option pricing theory. Students are expected to combine market research results and electronic information sources to create optimal investment strategies. Prerequisite: Management FE209A.

FE210 Business Strategy (4). The study of the functions and responsibilities of senior management and the decisions that determine the direction of the organization and shape its future. Methods include application of concepts, frameworks, and analytical techniques to the strategic issues which real-world companies face. Prerequisites: Management FE202, FE205, FE209A.

NOTE: For course descriptions *not* shown below, refer to the corresponding course number in the Full-Time M.B.A. Program list.

FE213 New Venture Management: A Course in Entrepreneurship (4). Prerequisites: Management FE202, FE205, FE210.

FE214 Entrepreneurship: Planning the New Venture (4). Prerequisites: Management FE202, FE205, FE210.

FE215 Global Competitive Strategy (4). Prerequisites: Management FE202, FE205, FE210.

FE218 Business Dynamics (4). Prerequisites: Management FE200, FE202, FE210.

FE225 Negotiations (4). Prerequisites: Management FE200, FE202.

FE228 International Management (4). Prerequisites: Management FE200, FE202.

FE229 Leadership Strategies (4). Prerequisites: Management FE200, FE202.

FE231A FSA-Earnings Quality and Asset Analysis (4). Prerequisite: Management FE203A

FE231B FSA-Liability and Equity Analysis (4). Prerequisite: Management FE231A.

FE234 Financial Statement Analysis (4). Prerequisite: Management FE203A.

FE242 Portfolio Management (4). Prerequisite: Management FE209B.

FE243 Bonds and Fixed Income (4). Prerequisite: Management FE209B.

FE248 Corporate Valuation (4). Prerequisite: Management FE209B.

FE249 Derivatives (4). Prerequisite: Management FE209B.

FE250 Consumer Behavior (4). Prerequisite: Management FE205.

FE251A Marketing Research (4). Prerequisite: Management FE205.

FE252A Advertising and Communications Management Companies (4). Prerequisite: Management FE205.

FE252D New Product Development (4). Prerequisite: Management FE205.

FE253 Advanced Micromarketing (4). Develop marketing plans for retailers and neighborhoods based on past purchases and demographics. Covers retail site selection, category management, promotion management, shelf space allocation, pricing, promotions, targeted advertising, consumer segmentation, media selection, list management, and GIS software. Prerequisite: Management FE205.

FE256 Design Management and Innovation (4)

FE257 Marketing on the Internet (4). Prerequisite: Management FE205.

FE258 Marketing Strategies for High Technology (4). Prerequisite: Management FE205.

FE259 Strategic Brand Management (4). Prerequisite: Management FE205.

FE272 Critical IT Decisions for Business Executives (4). Prerequisite: Management FE207.

FE274 Database Management and Strategic Applications (4). Prerequisite: Management FE207.

FE280 Forecasting (4)

FE283 Decision Analysis (4)

FE285 Supply Chain Management (4)

FE287 Project Management (4)

FE290A-H Special Topics (2 to 4). May be repeated for credit as topic varies.

FE292 Business Law (4)

FE294 Special Topic ITM Seminars (4). May be repeated for credit as topics vary.

FE295 Global Business (8). Emphasizes and reinforces international perspectives contained in the FEMBA curriculum by providing a week-long intensive seminar abroad in the second year. Scholars and business people from the host country instruct FEMBA students in specially designed class sessions and company visits.

FE296 Executive Leadership (6). Focuses on the conceptual, practical, and personal dimensions of executive leadership. Past and current leadership theories are addressed. Individual personal assessment and diagnosis. Satisfactory/Unsatisfactory only.

FE299 Individual Directed Study (1 to 8). Individual study under the direction of a selected faculty member.

DEPARTMENT OF EDUCATION

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Rebecca Black, Ph.D. University of Wisconsin, *Assistant Professor of Education* (language and literacy, popular culture, online learning)

Liane Brouillette, Ph.D. University of Colorado, Boulder, *Associate Professor of Education* (educational leadership, qualitative research, arts in education)

Margaret Burchinal, Ph.D. University of North Carolina, Chapel Hill, *Professor of Education and of Psychology and Social Behavior* (statistics, childcare, and pre-kindergarten education)

Penny Collins, Ph.D. Ontario Institute for Studies in Education, University of Toronto, *Associate Professor of Education* (cognition and learning, linguistic diversity, reading, phonological processing, learning disabilities)

Gilberto Q. Conchas, Ph.D. University of Michigan, *UCI Chancellor's Fellow and Associate Professor of Education* (diversity and equity in education, race and urban education, immigration, school reform)

AnnMarie M. Conley, Ph.D. University of Michigan, Ann Arbor, *Assistant Professor of Education* (motivation, adolescent development, person-centered approaches to studying change)

Thurston Domina, Ph.D. City University of New York, *Assistant Professor of Education and Sociology* (educational policy, higher education inequality)

Greg Duncan, Ph.D. University of Michigan, *UCI Distinguished Professor of Education, Economics, and Psychology and Social Behavior* (economics of education, program valuation, child development)

George Farkas, Ph.D. Cornell University, *Professor of Education and Sociology* (achievement gap, educational inequality, early childhood, after-school programs)

Alan R. Hoffer, Ph.D. University of Michigan, *Professor Emeritus of Education*

Joseph Mahoney, Ph.D. University of North Carolina, Chapel Hill, *Associate Professor of Education and of Psychology and Social Behavior* (child/adolescent social development, out-of-school time, social/educational intervention and policy)

Michael E. Martinez, Ph.D. Stanford University, *Co-Director of the CSU/UCI Joint Ed.D. Program and Professor of Education* (cognition and learning, intelligence)

Jack McCullough, Ph.D. United States International University, *Lecturer with Security of Employment Emeritus*

Carol Booth Olson, Ph.D. University of California, Los Angeles, *Senior Lecturer with Security of Employment* (UCI Writing Project, academic writing, language arts, adolescent literacy)

Leticia Oseguera, Ph.D. University of California, Los Angeles, *Assistant Professor of Education* (race/ethnic, gender, and class relations, educational access and persistence, quantitative methods)

Rita W. Peterson, Ph.D. University of California, Berkeley, *Senior Lecturer with Security of Employment Emerita*

Stephanie Reich, Ph.D. Vanderbilt University, *Assistant Professor of Education* (social emotional development, parent-child interactions, peer networks)

Lindsey Richland, Ph.D. University of California, Los Angeles, *Assistant Professor of Education and of Psychology and Social Behavior* (learning, memory, higher-order reasoning, classroom discourse, technology in math and science education)

Judith Haymore Sandholtz, Ph.D. Stanford University, *Associate Professor of Education* (teacher professional development, teacher education, school-university partnerships))

Rossella Santagata, Ph.D. University of California, Los Angeles, *Assistant Professor of Education* (mathematics education, video and multimedia in teacher learning, culture and learning)

Timothy M. Tift, M.A. Pepperdine University, *Lecturer with Security of Employment Emeritus*

Deborah Lowe Vandell, Ph.D. Boston University, *Department Chair of Education and Professor of Education and of Psychology and Social Behavior* (developmental processes and educational outcomes, longitudinal research methods, after-school programs, early childhood education, teacher-child relationships)

Elizabeth van Es, Ph.D. Northwestern University, *Assistant Professor of Education* (teacher cognition, professional development, teacher learning communities)

Mark Warschauer, Ph.D. University of Hawaii, *Professor of Education and Informatics* (language and literacy, technology in education, diversity and equity)

Maria Estela Zarate, Ph.D. University of California, Los Angeles, *Assistant Professor of Education* (college access, gender equity, diversity and equity)

Affiliated Faculty

Jonathan Alexander, Ph.D. Louisiana State University, *Campus Writing Coordinator and Associate Professor of English and Education* (writing studies, new media, and sexuality studies)

Christopher S. Carpenter, Ph.D. University of California, Berkeley, *Associate Professor of Management, Economics, and Education* (health economics, public policy, labor economics, evaluation, economic demography)

Elizabeth Cauffman, Ph.D. Temple University, *Associate Professor of Psychology and Social Behavior and of Education* (adolescent development, mental health, juvenile justice)

Chuansheng Chen, Ph.D. University of Michigan, *Professor of Psychology and Social Behavior and of Education* (cross-cultural psychology, socialization of achievement, adolescent development)

Cynthia Feliciano, Ph.D. University of California, Los Angeles, *Associate Professor of Chicano/Latino Studies, Sociology, and Education* (race/ethnicity, education, immigration)

David John Frank, Ph.D. Stanford University, *Professor of Sociology and Education* (environmental sociology, sexuality and homosexuality, education)

Wendy A. Goldberg, Ph.D. University of Michigan, *Professor of Psychology and Social Behavior and of Education* (developmental psychology, children and their families, transition to parenthood, social policy)

Manuel N. Gómez, Ph.D. University of Southern California, *Vice Chancellor for Student Affairs and Adjunct Professor of Education* (higher education, culture, ethnicity, sociology)

Bradley Hughes, Ph.D. University of California, Irvine, *Lecturer with Security of Employment, Ecology and Evolutionary Biology, and Education* (science education)

Susan C. Jarratt, Ph.D. University of Texas at Austin, *Professor of Comparative Literature and Education* (histories and theories of rhetoric, composition pedagogy and teacher preparation, feminist theory and pedagogy)

Julia Reinhard Lupton, Ph.D. Yale University, *UCI Chancellor's Fellow, Director of the Humanities Core Course, and Professor of English, Comparative Literature, and Education* (Renaissance literature, literature and psychology)

Virginia Mann, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and Education* (speech perception and its development, the development of reading ability, developmental dyslexia)

Robin Scarcella, Ph.D. University of Southern California, *Director of the Academic English/English as a Second Language Program and Professor of Academic English and English as a Second Language, Humanities, and Education* (linguistics, language development emphasis)

Program Directors and Coordinators

Nancy Christensen, Ed.D. University of California, Irvine; *Director of Communications and Coordinator of the UCI Ph.D. in Education Program*

Judith Conroy, Ed.D. University of California, Irvine, *Director of Teacher Education and Student Affairs*

Dennis Evans, Ed.D. University of Southern California, *Academic Coordinator, Emeritus*

Christina Giguiere, M.A., M.S. University of California, Irvine, *Coordinator of the Multiple Subjects Credential Program*

Karol Gottfredson, M.A. State University of New York, Albany, *Coordinator of the Intern Program and Spring Cohort*
Sue Marshall, Ph.D. University of California, Los Angeles, *Director of Undergraduate Programs in Education*

Lecturers

Bruce Baron, M.S. Pepperdine University, *Lecturer* (social science education)
Kevin Dempsey, M.S. California State University, Fullerton. *Lecturer* (science education)
Jacqueline D'Warte, M.Ed. Sydney University, *Lecturer* (language literacy)
Susan Guilfoyle, M.S. University of Southern California, *Lecturer* (reading, language and literacy)
Valerie Henry, Ed.D. University of California, Irvine, *Lecturer* (mathematics education)
Jeffrey Johnston, M.S. University of Illinois; M.A. University of Southern California, *Lecturer* (ethics in education, elementary physical education and health education)
Jeanne Stone, M.A. California State University, Long Beach, *Lecturer* (language arts and mathematics education)
Brad Van Patten, M.A. California State University, Long Beach, *Lecturer* (visual and performing arts)

Overview

The Department of Education is a unique interdisciplinary academic unit committed to promoting educational success in and out of school for ethnically and economically diverse learners from preschool through college (P–20) through collective research, teaching, and service activities. The multidisciplinary faculty includes scholars in psychology, sociology, economics, linguistics, language and literacy, policy, race and ethnicity, and the achievement gap. Their research addresses core issues in contemporary education: (1) equity of opportunity for ethnically, linguistically, and economically diverse learners; (2) teaching and learning in science and math; (3) early childhood education and development; (4) out-of-school learning; and (5) effective interfaces between technology and education.

The Department integrates the themes of Learning, Cognition, and Development; Social Context and Educational Policy; and Language, Literacy, and Technology across its programs, including the minor in Educational Studies, Credential, the Master's in Teaching, and the Ph.D. in Education. Scholarly work arises from the common belief that education environments, both in and out of school, are the locus of change in the quality of life and the availability of productive life choices for learners of all ages.

Teaching and Service Credential Programs

The Department of Education offers teacher and school administrator professional preparation programs for California teaching and service credentials.

The Department is authorized by the Commission on Teacher Credentialing (CTC) to offer full-time programs for California's two basic teaching credentials—the Multiple Subjects Credential and the Single Subject Credential. There are two paths available to obtain each of these teaching credentials: the Intern Teacher Credential program (subject to school district demand) and the Student Teacher Credential program. Both of these are offered as post-baccalaureate programs. In partnership with the School of Physical Sciences, the Department of Education also offers the Cal Teach Science and Mathematics Program, an undergraduate Student Teacher Credential program for aspiring mathematics or science teachers. Additionally, in cooperation with University Extension, the Department offers Administrative Services Credential programs and a Reading Certificate program.

MULTIPLE SUBJECTS TEACHING CREDENTIAL

A Multiple Subjects Teaching Credential authorizes teaching in multiple-subjects environments, as is commonly the format in California elementary schools, as well as designated classrooms with English Language Learners.

A Preliminary Multiple Subjects Teaching Credential is awarded by the State upon completion of a baccalaureate degree and the State-approved UCI teacher education program that includes student or intern teaching (subject to school district demand) and a teaching performance assessment.

Students must also complete the following:

Prior to Admission:

Verify basic skills by passing the CBEST exam or (for multiple subjects) by passing the CSET subtests 101, 102, 103, and 142;

Obtain a Certificate of Clearance from the State of California;

Obtain a TB test with negative results.

Prior to the start of the program:

Verify subject matter competency by passing the CSET exam or completing a Subject-Matter Preparation Program.

For Credentialing:

Complete a college-level course or pass an examination on the U.S. Constitution;

Obtain a CPR certificate in Adult, Child, and Infant Training;

Pass the Reading Instruction Competency Assessment (RICA).

SINGLE SUBJECT TEACHING CREDENTIAL

A Single Subject Credential authorizes teaching in a single-subject environment, as is commonly the format in California high schools and middle/intermediate schools. UCI offers Single Subject Teaching Credentials in art, English, languages other than English, mathematics, music, sciences, and social science.

A Preliminary Single Subject Teaching Credential is awarded by the Commission on Teacher Credentialing (CTC) upon completion of a baccalaureate degree and the State-approved UCI teacher education program that includes student teaching or intern teaching (subject to school district demand) and a teaching performance assessment.

Requirements for the Post-baccalaureate Single Subject Credential Program

Prior to Admission:

Verify basic skills by passing the CBEST exam;

Obtain a Certificate of Clearance from the State of California;

Obtain a TB test with negative results.

Prior to the start of the program:

Verify subject-matter competency by passing the required CSET exams or by completing an approved subject-matter preparation program in the content area.

Students who plan to take the CSET should consult early with an academic counselor in the Department of Education about undergraduate courses and degree programs in the student's selected discipline that will help prepare for the examination (e.g., undergraduate concentrations for secondary teaching offered in biological sciences, chemistry, mathematics, physics, social sciences, and Spanish). Single Subject students must pass all subtests of the CSET or complete an approved subject-matter program prior to student or intern teaching.

California requires all credential candidates to demonstrate subject-matter competence. Single subject candidates achieve this

by passing the appropriate CSET examination in their subject area or by completing a CTC-approved subject-matter program in the teaching area. UCI offers a CTC-approved subject-matter program in Mathematics. While a major in Mathematics is not required to complete the subject-matter preparation program, the Mathematics major with a specialization in Mathematics for Education is designed to satisfy most of the subject-matter preparation requirements.

For Credentialing:

Complete a college-level course or pass an examination on the U.S. Constitution;

Obtain a CPR certificate in Adult, Child, and Infant Training.

NOTE: For the Intern Teacher Program, applicants must verify subject-matter competency prior to admission.

Requirements for the Undergraduate Cal Teach Science and Mathematics Single Subject Credential Program

The following departments offer undergraduates an option to earn a bachelor's degree in mathematics or a science discipline while concurrently satisfying requirements for a Single Subject Teaching Credential: Chemistry, Earth System Sciences, Mathematics, and Physics and Astronomy. Interested students should consult degree program options described in this *Catalogue* or talk with a counselor in the School of Physical Sciences Student Affairs Office. With careful, early planning, it is possible for students to complete their bachelor's degree and teacher certification in four years.

Prior to Entry in the Cal Teach Single Subject Credential Program:

Complete two introductory courses: Physical Sciences 5/Biological Sciences 14, Introduction to Science and Mathematics Teaching, and Physical Sciences 105/Biological Sciences 101, Middle School Science and Mathematics Teaching;

Declare a major and, if applicable, a concentration in secondary education in one of departments offering a Cal Teach Science and Mathematics credentialing option;

Complete a Cal Teach Program enrollment form, indicating intent to complete requirements for the Single Subject Teaching Credential for mathematics or one of the science disciplines. This must be done by the end of an undergraduate's second year at the latest, and prior to enrolling in Education 55, which would typically be completed in fall of the third year. Enrollment forms are available in the School of Physical Sciences Student Affairs Office (134 Rowland Hall) and in the Cal Teach Science and Mathematics Resource and Advising Center (137 Biological Sciences Administration).

Prior to the start of student teaching:

Verify basic skills by passing the California Basic Education Skills Test (CBEST);

Verify subject-matter competency by passing the California Subject Exam for Teachers (CSET) or by completing a subject-matter preparation program (available for Mathematics only);

Obtain a Certificate of Clearance from the State of California;

Obtain a TB test with negative results.

Additional Requirements for Credentialing:

Earn a bachelor's degree.

Earn a grade of C or better in the following teacher credential courses: Physical Sciences 105/Biological Sciences 101; Education 55, 109, 143A, 143B, 148, and 158.

Complete a college-level course or pass an examination on the U.S. Constitution;

Obtain a CPR certificate in Adult, Child, and Infant Training.

INTERN TEACHER PROGRAM

Through the intern program, a candidate may earn a stipend from a sponsoring school district for one year of teaching while completing credential requirements. To serve as an intern, the student must be admitted to the Department of Education Intern Teacher program, receive an internship offer from a participating school district, and be eligible for an intern credential. Intern candidates are selected by UCI and receive internship offers from participating school districts based upon qualifications of the candidate and the current needs of the school districts. Eligibility requirements for an intern credential include a baccalaureate degree, current TB test clearance, Certificate of Clearance, passage of the CBEST, verification of subject-matter competence, passage of a course or college-level examination on the U.S. Constitution, and CPR certification.

Spring Start Multiple Subjects candidates are required to take the following courses: 173, 308, 311, 313, 319, 320, 322, 323, 324, 325, 327, 328, 329, 330, 331, and 332.

Spring Start Single Subject candidates are required to take the following courses: 173, 307 or 317, 310, 315, 319, 334, 338, 340, or 341 (students enroll in the section of their proposed credential authorization), 342, 347, 348, 349, 350 (or 108), and 352.

A grade of B or better is required in all courses and in intern teaching for successful completion of the program. If competence has been demonstrated by the conclusion of the intern teaching program and all Department and CTC requirements are met, the student is eligible for a preliminary credential recommendation by UCI.

For further information see an academic counselor or the intern program coordinator in the Department of Education.

STUDENT TEACHER PROGRAM

Candidates who enroll in the Multiple Subjects Student Teacher Credential program at UCI generally are required to take the following courses: Education 173, 301, 303, 304 or 306, 308, 320, 322, 323, 324, 325, 326, 327, 329, 330, and 348.

Candidates who enroll in the post-baccalaureate Single Subject Student Teacher Credential program at UCI generally are required to take the following courses: Education 173, 302, 305, 307 or 309, 310, 334, 336–341 (students enroll in the section of their proposed credential authorization), 342, 346, 347, 348, 349, 350, and 352.

Candidates who enroll in the undergraduate Cal Teach Single Subject Student Teacher Credential program at UCI generally are required to take the following courses: Physical Sciences 5/Biological Sciences 14, Physical Sciences 105/Biological Sciences 101; Chemistry 193/Physics 193/Biological Sciences 108, Mathematics 8 (for Mathematics candidates only), Logic and Philosophy of Science 60; Education 55, 109, 143A, 143B, 148, and 158.

Student teaching for Multiple Subjects candidates (grades K–6) is defined as a full-day, four-days-per-week assignment during the first quarter of student teaching and a full-day, five-days-per-week assignment during the second quarter of student teaching. Assignments will include two levels within the K–6 range in elementary schools.

Student teaching for Single Subject candidates (grades 7–12)) in the post-baccalaureate program is defined as a full-day, five-days-per-week assignment, for one full public school semester in an appropriate classroom setting in middle or high schools. Student teaching for Single Subject candidates in the undergraduate Cal Teach program is defined as a minimum of four hours per day, five-days-per-week assignment, for at least one full public school semester in an appropriate classroom setting in middle or high school.

Clearances for student teaching are processed by the Department of Education and are contingent upon a Certificate of Clearance, a current TB test clearance, academic preparation clearances including CBEST, and verification of subject-matter competence.

Advancement to student teaching is limited to those candidates who are adjudged to be professionally ready to assume such responsibilities. Such readiness shall be determined by, but not be limited to, the candidate's academic work, professional conduct, and potential for success in teaching. Failure to be advanced to student teaching will be considered good cause for removal and/or a leave of absence from the program.

For the post-baccalaureate programs, a grade of B or better is required in all courses and in student teaching for successful completion of the program. If competence has been demonstrated by the conclusion of the student teaching program and all other CTC and Departmental requirements are met, the student is eligible for a preliminary credential recommendation by UCI.

For the undergraduate Cal Teach Single Subject Credential Program, a grade of C or better is required in the following courses: Physical Sciences 105/Biological Sciences 101; Education 55, 109, 143A, 143B, 148, and 158. If competence has been demonstrated by the conclusion of the student teaching program and all other CTC and Departmental requirements are met, the student is eligible for a preliminary credential recommendation by UCI.

STUDENT TEACHER PROGRAM WITH BCLAD (SPANISH) EMPHASIS

Students who are bilingual in Spanish (as ascertained through testing) may be eligible for the Bilingual Crosscultural, Language, and Academic Development (BCLAD, emphasis in Spanish) credential. Students should consult an academic counselor in the Department of Education for more detailed information.

SUPPLEMENTARY AND ADDITIONAL TEACHING AUTHORIZATIONS

After acquiring a basic credential, it is possible to add further teaching authorizations. Consult an academic counselor in the Department of Education for details.

PREPARATION FOR APPLYING TO THE POST-BACCALAUREATE CREDENTIAL PROGRAMS

It is recommended that a candidate begin to prepare for admission at least a year in advance. Eligibility for admission is supported by passing the CBEST, providing evidence of possession of or application for a Certificate of Clearance, a negative TB test, and successfully completing the appropriate subject area examinations or an approved subject-matter preparation program. A considerable amount of time is needed to accomplish or acquire these necessary items.

The Department of Education requires appropriate field experiences or other professional life experiences prior to the program to prepare for the teaching profession and strengthen an admissions file. Course credit for field experience is available through Education 100, 103, and 160/160L, as well as through other University courses and programs. Field experience can also be earned by other appropriate activities, e.g., tutoring, assisting in public school classrooms.

Admission to the Credential Programs

Information is available from the Department of Education, 2000 Education Building. Prospective students may apply online by accessing the Department's Web site at http://www.gse.uci.edu/. Admission decisions are based on a broad range of factors including, but not limited to, the following:

Verification of Basic Skills

For Multiple Subjects Candidates:

Pass the CBEST exam or pass subtests 101, 102, 103, and 142 and CSET writing skills.

For Single Subject Candidates:

Pass the CBEST.

CBEST must accompany the application for admission.

Verification of Subject Matter

For Multiple Subjects Candidates:

Pass subtests 101, 102, and 103 of the CSET for Multiple Subjects.

For Single Subject Candidates:

Pass the appropriate subtests of the CSET, **or**

Complete a CTC-approved subject-matter preparation program.

Candidates are urged to pass CSET exams as soon as possible. It is not recommended that a person take more than two subtests in one sitting, and it is not uncommon for people to have to retake one or two subtests. Therefore, it is essential to make a strategic plan that allows for several test dates. CSET test information and study materials can be found at http://www.cset.nesinc.com.

Absence of Criminal Conviction that Would Preclude the Issuance of a Credential. All students are required by law to obtain a Certificate of Clearance from the Commission on Teacher Credentialing (CTC). Applicants must provide evidence of filing for this certificate as part of their application for admission to the credential program.

Written Recommendations. Three letters of recommendation are required for admission. These letters should address (1) your ability to do graduate level work, (2) your capacity to work with or your experience with children, and (3) your ability to work as part of a team and your work habits.

Academic Achievement. Completion of a baccalaureate degree from an accredited institution and a minimum grade point average of 3.0 will support consideration of admission to the credential programs. Undergraduates who enroll in courses leading to a credential are not guaranteed admission to the program; admission through the regular graduate admissions process is required.

ADMINISTRATIVE SERVICES CREDENTIAL

Administrative Services credentials are issued by the State in pupil personnel services, administrative services, health services, library services, and clinical-rehabilitative services. UCI offers programs leading to the Administrative Services Credential generally required for school administrators.

There are two tiers of the Administrative Services Credential. In the first tier, a candidate obtains the Preliminary Administrative Services Credential by completing the approved program of 36 quarter units and a comprehensive examination. This credential also requires a valid basic credential, three years of full-time teaching or services experience, and passage of the CBEST. This credential program is jointly offered by the Department of Education and University Extension.

After an administrative position is obtained, the individual must begin the Professional Clear Administrative Services Credential (tier two) program. The UCI Professional Clear Administrative Services program requires two years of successful full-time school administrative experience in a position, the Preliminary Administrative Services Credential, and six (6) quarter units (Induction and Final Evaluation, Education 398A-B) which provide structured mentoring, self-assessment, and formative/summative evaluation of the candidate.

Students interested in these credentials should make an appointment with the director of the program in University Extension.

Undergraduate Minor in Educational Studies

The minor in Educational Studies is designed to (1) foster exploration of a broad range of issues in the field of education, (2) provide a strong foundation for students who aspire to become teachers in grades pre-K–20, and (3) offer an early-start course-work option for aspiring teachers that leads to the UCI teaching credential program. Students explore topics and gain practical field experience that provide a knowledge base and skills applicable to careers in teaching, to graduate study in education or related fields, and to roles as citizens, parents, and volunteers.

The Department's academic counseling staff can assist students to select a coordinated set of courses based on their stated objectives. Aspiring K–12 teachers also have options for an "early start" to teaching by completing selected minor courses that will also satisfy requirements for the UCI multiple subjects or single subject teaching credential programs. Students interested in serving community out-of-school programs can select new courses on topics relevant to after-school education. Students who are interested in future graduate study can select undergraduate courses that will lay a foundation for the study of core subject areas in the Department of Education's Ph.D. program.

Requirements

The minor requires completion of a minimum of seven courses (three core courses and four electives) totaling 28 units. At least five courses must be upper-division. Students must also complete a minimum of 40 hours of verifiable field experience or research in an educational setting. No more than two non-Education courses (up to 8 units) from the student's major area of study may be used to satisfy the minor requirements. A maximum of 8 units may be used to satisfy minor requirements with any repeatable course.

Core Courses: Three core courses (12 units) must be selected from Education 50 (Origins, Purposes, and Central Issues in K–12 Education), 107 (Child Development in Education), 108 (Adolescent Development in Education), 124 (Multicultural Education in K–12 Schools), 173 (Cognition and Learning in Educational Settings), 175 (Foundations of Education), and 176 (Psychology of Learning, Abilities, and Intelligence).

Elective Courses. Four elective courses (16 units) must be selected from the following:

A. Education courses numbered 1–199. A course selected to satisfy the minor core requirement cannot also be used to satisfy the elective requirement.

B. Up to 4 units allowed for an approved course offered by another department. The course must appear on the list below, or the student may petition approval of a course that is not on the list. Petition forms are available on the Department's Web site.

The following are approved elective courses offered by other departments:

Humanities 195 (Humanities Out There Practicum); Physical Sciences 5/Biological Sciences 14 (California Teach 1: Introduction to Science and Math Teaching); Physical Sciences 105/Biological Sciences 101 (California Teach 2: Middle School Science and Mathematics Teaching); Physical Sciences 106/Biological Sciences 102 (California Teach 3: High School Science and Math Teaching); Psychology 141A (Education and Children); Psychology 144A-B-C (HABLA: Language Intervention for Disadvantaged Children); Psychology 145P-Q-R (Attention and Learning Deficits in Children); Social Science 196 (Global Connect Practicum); University Studies 175 (Methods and Application in Small Group Instruction); University Studies 192 (Group Project for Discussion Leaders).

Practicum. The student must complete a minimum of 40 hours of verifiable field experience or research in an educational setting. This requirement may be satisfied in any combination of the following to reach a total of 40 hours:

A. Complete field experience hours that satisfy requirements for UCI courses. The number of fieldwork hours in a course must be verified by the course syllabus or by a fieldwork verification form signed by the instructor.

B. Complete education-related research in conjunction with Education 198.

C. Get approval by petition for fieldwork hours completed during a student's tenure at UCI that are independent of any courses (e.g., tutoring experience, instructional experience in a summer program or after-school program for children). When fieldwork approval by petition is needed, students submit a fieldwork verification form to the Department of Education Student Affairs Office. Forms are available on the Department's Web site.

The Department of Education Student Affairs Office can provide up-to-date information about courses that include fieldwork. Before enrolling in a course with the intent of satisfying the minor practicum requirement, students are advised to check with the instructor or the course syllabus to verify the exact number of hours. The following is a list of Education courses that usually include 10 hours or more of fieldwork:

Education 100 (Educational Strategies for Tutoring and Teacher Aiding); Education 103 (Advanced Tutoring); Education 104D (Preparation for Teaching Fine Arts in K–12 Schools); Education 131 (Educational Technology); Education 132 (Reading and Writing Enrichment for After-school Programs); Education 124 (Multicultural Education in K–12 Schools); Education 137 (Art in the Elementary School); Education 141A-B-C/Psychology 141J-K-L (Jumpstart: Early Language, Literacy, and Social Development); Education 153B (Urban Youth and the Development of Literacy Through Arts II); Education 160 (Foundations of Out-of-School Learning); Education 178 (Poetry in the K–12 Classroom); Education 181B (Principles and Practices of Coaching Sports II); Education 193 (Directed Studies in Early Childhood Education).

Residence Requirement. At least four upper-division courses must be successfully completed at UCI.

Statement of Intent. A Statement of Intent is required of all students wishing to enroll in this minor; forms are available from the Department's Web site: http://www.gse.uci.edu/ap_umes.php.

GPA Requirement. For certification in the minor, a student must obtain a minimum overall grade point average of at least C (2.0) in all courses required for the minor program. No more than two courses (8 units) applied to the minor may be taken Pass/Not Pass.

Other Courses. Students should consult a Department of Education Student Affairs counselor about UCI 300-level Education courses that are open to undergraduates or courses from other colleges or universities that can satisfy minor in Educational Studies requirements.

Minor Courses That Also Provide an Early Start Toward a Teaching Credential. The following courses satisfy core or elective requirements for the minor in Educational Studies, and concurrently satisfy some requirements for the UCI Multiple Subjects or Single Subject Teacher Credential programs when the student earns a grade of B or better (may not be taken Pass/Not Pass). Aspiring K–12 teachers should consult a counselor in the Department of Education Student Affairs Office about selecting courses that are best suited to particular teaching credentials and to discuss eligibility for the UCI Teacher Credential program. The following courses provide an early start:

Education 107 (Child Development in Education)[1], 108 (Adolescent Development in Education)[2], 124 (Multicultural Education in K–12 Schools), 128 (Exceptional Learners), 131 (Educational Technology)[3], 137 (Art in the Elementary School)[1], 139 (Technology and Literacy)[3], 152F (Teaching Mathematics with Technology)[3], 173 (Cognition and Learning in Educational Settings), 176 (Psychology of Learning, Abilities, and Intelligence).

[1] Satisfies a requirement in the UCI Multiple Subjects Credential program only.

[2] Satisfies a requirement in the UCI Single Subject Credential program only.

[3] Students satisfy an educational technologies requirement in the UCI Single Subject Credential program by completing one of the following: Education 131, 139, or 152F.

Graduate Degree Programs

MASTER OF SCIENCE IN CHEMISTRY OR MATHEMATICS WITH A TEACHING CREDENTIAL

In cooperation with the Departments of Chemistry and Mathematics, the Department of Education offers coordinated programs for the California Single Subject Teaching Credential and a Master of Science degree in Chemistry or Mathematics. Additional information is available from the Department of Education Student Affairs Office and the Graduate Affairs Office in the Departments of Chemistry and Mathematics.

MASTER OF ARTS IN SOCIAL SCIENCE WITH A TEACHING CREDENTIAL

In cooperation with the School of Social Sciences, students enrolled in a graduate program offered by the School may choose to pursue a teaching credential while working toward their degree. After completion of the requirements for an M.A. degree, students may apply for admission into the credential program administered by the Department of Education. A detailed description of the program may be obtained from the Department of Education Student Affairs Office and the Social Sciences Graduate Office.

MASTER OF ARTS IN TEACHING IN ELEMENTARY AND SECONDARY EDUCATION

The Department of Education offers an M.A.T. degree program in Elementary and Secondary Education. The 15-month program is designed for candidates with a baccalaureate degree who wish to earn a teaching credential in conjunction with an advanced degree. The M.A.T. program consists of a one-year teacher credential program of the student's choice (Multiple Subjects or Single Subject), and a total of six additional courses usually taken before and after the credential program. The combination of the M.A.T. courses with the UCI credential program provides a theoretical and practical framework with a focus on learning to learn from one's teaching practice.

Admission

Successful candidates must meet the general admission requirements of the UCI Office of Graduate Studies and must be admitted to a credential program offered by the Department of Education. Selection of candidates is based on the overall strength of each applicant's undergraduate preparation; three letters of recommendation from individuals who are familiar with the applicant's (1) ability to pursue graduate study, (2) capacity to work with children, and (3) demonstrated fitness for the professional environment of teaching; and scores on the Graduate Record Examination (GRE).

Verification of Basic Skills

For Multiple Subjects Candidates:
Pass the CBEST exam or by passing subtests I, II, III, and CSET writing skills.

For Single Subject Candidates:
Pass the CBEST.

Verification of Subject Matter

For Multiple Subjects Candidates:
Pass subtests I, II, and III of the CSET for Multiple Subjects.

For Single Subject Candidates:
Pass the appropriate subtests of the CSET, **or**

Complete a CTC-approved subject-matter preparation program.

Candidates are urged to pass CSET exams as soon as possible.

Program of Study

During the summer prior to beginning the credential program, students admitted to the M.A.T. program enroll in three courses: Teachers' Lives and the Policy Environment of Teaching (Education 201), Outcomes of Schooling and Student Assessment (Education 202), and Advanced Concepts in Learning and Cognition (Education 203). In the summer following completion of their credential program, M.A.T. candidates enroll in three courses: Critical Assessment of Teaching Practice and Learning (Education 205), Cognition and Pedagogy in Specific School Subjects (Education 206) or Cognition and Pedagogy in Quantitative Literacy (Education 207), and Instructional Design and Educational Technologies (Education 240). Some students elect to complete a teaching credential program, then enter the M.A.T. program the following summer. NOTE: Education 173 is prerequisite to Education 203; therefore, it is recommended that applicants take this course before enrolling in the first summer courses.

Residency. Full-time study for one year and two summers is required.

Comprehensive Examination

A comprehensive examination is completed by M.A.T. candidates during the second summer. The examination consists of a structured paper comprised of weekly assignments in Education 205 and is reviewed by two faculty in the M.A.T. program.

DOCTOR OF PHILOSOPHY IN EDUCATION

The Department of Education offers a Ph.D. degree in Education. The program seeks applicants from varied backgrounds and experiences who have the potential to become outstanding scholars and researchers in the field of education. The program currently offers three specializations: (1) Learning, Cognition, and Development; (2) Educational Policy and Social Context; and (3) Language, Literacy, and Technology. Students enrolling in the program choose among the specializations based on their research interests. Course work for the program ordinarily takes two to three years to complete and involves a number of core courses, methodology courses, elective courses, and a directed research sequence. Students should advance to candidacy in their third year. The normative time for

completion of the Ph.D. is five years, and the maximum time permitted is seven years. Program length may be shorter for students who enter the program with a prior master's degree in an area closely related to their doctoral research.

Students are admitted to the program once per year to begin each fall quarter. Applicants must have completed a bachelor's degree with a grade point average of at least 3.0 and have prior course work related to the specialization for which they express interest. Applicants are required to submit a UCI application, transcripts, a statement of purpose, CV or resume, a writing sample, three letters of reference, and general GRE scores completed within the past five years. Students whose primary language is not English and who did not graduate from a U.S. college or university are also required to submit scores from either the TOEFL examination or the Academic Modules of the International English Language Testing System (IELTS).

Financial support will be offered on a competitive basis in the form of teaching or research assistantships. Students who are not citizens of countries where English is the primary or dominant language who wish to apply for a teaching assistantship will be required to fulfill an English proficiency requirement.

Further information regarding the Ph.D. program, courses, and application requirements is available on the Department of Education's Web site at http://www.gse.uci.edu.

Master of Arts in Education

The Department of Education offers an M.A. degree in Education as an option exclusively for students who are admitted to the Ph.D. in Education program. Separate applications for the M.A. in Education will not be accepted. Further information regarding the requirements for the M.A. in Education for students enrolled in the Ph.D. program is available at http://www.gse.uci.edu.

Courses in Education

(Schedule of Classes **designation: Educ)**

UNDERGRADUATE

50 Origins, Purposes, and Central Issues in K–12 Education (4) F, W, S. An introduction to the role of education in U.S. society and to central issues in K–12 education. Education is studied from four different perspectives: social, historical, philosophical, and political.

55 Knowing and Learning in Mathematics and Science (5) F. Multidisciplinary study of knowing and learning in secondary school mathematics and science. Topics include standards for knowing, scientific epistemologies, mental representations, problem solving, expert-novice studies, assessment, and domain-specific thinking, learning, and teaching. Applied analysis of learning through clinical interviews. Prerequisite: Physical Sciences 5 or Biological Sciences 14. **(III)**

100 Educational Strategies for Tutoring and Teacher Aiding (4) F, W, S. Placement in a public elementary or secondary school to gain experience as a tutor or teacher aide. Emphasis on cognitive learning and the development of instructional strategies and resources which can be used in effective cross-age and cross-cultural experiences. Pass/Not Pass only. May be taken for credit three times. Same as Engineering ENGR197A. **(IX)**

103 Advanced Tutoring (4) S. Lectures/discussions and 40 hours public school experience provide advanced strategies for tutoring under-achieving pupils; guidance using case studies to examine a range of factors that contribute to public school failure among elementary, middle, and secondary pupils. Prerequisite: Education 100 or consent of instructor.

104D Preparation for Teaching Fine Arts in K–12 Schools (4) W. Arts education, theory, curriculum and methods for university students specializing in studio art, digital arts, dance, music, and/or drama. Includes lesson planning and teaching strategies based on California and national frameworks and content standards, and fieldwork in K–12 settings. **(IX)**

104E Multimedia and the Arts in the Multicultural Classroom (4) S. Multiculturalism and underrepresented U.S. minorities and the visual and performing arts: perspectives in artistic perception, creative expression, historical and cultural context, and aesthetic valuing, and media literacy in the interpretation and production of multimedia arts products and applications for K–12 classrooms. Same as Studio Art 149. **(VII)**

106 Introduction to Early Childhood Education (4) F. Designed to provide an introductory survey of the nature, needs, and education of young children. Explores questions such as "What should we teach young children?" and "How should we teach?"

107 Child Development in Education (4) W. Explores the pathways of normally developing children's growth and change over time. In particular, focuses on how cognitive and social development impact and are driven by educational contexts.

108 Adolescent Development and Education (4) W. Explores the physical, cognitive, emotional, and social development of adolescents, with an emphasis on the practical implications of developmental theory and research findings for teachers and other professionals who work with adolescents in middle or high school contexts.

109 Reading and Writing in Secondary Mathematics and Science Classrooms (4) W. Emphasis is placed on understanding the literacy processes (listening, speaking, viewing, thinking, reading, and writing) as they relate to middle and high school mathematics and science. Students integrate literacy-related strategies with curriculum-based goals supported in the California State Frameworks. Corequisite: Education 158.

121 Child Care Research and Policy (4) W. Examines historical changes in child care over the past 50 years, research on how child care experiences relate to child development while children are in child care and after they enter primary school, and the government policies regarding child care. Prerequisite: junior or senior standing.

122A-B-C Foundations of Elementary School Mathematics I, II, III (4-4-4) F, W, S. Provides understanding of fundamental mathematics necessary to teach for conceptual understanding and higher-level reasoning and problem solving. Conceptual understanding of place value, fractions, proportionality, geometry, algebra, functions, probability, statistics, and measurement. Instructional applications of these concepts in grades K-8 teaching.

124 Multicultural Education in K–12 Schools (4) F, W, S, Summer. Provides a theoretical and empirical overview of educational issues affecting low-income immigrant and U.S.-born minority student populations in an increasingly diverse and changing society. **(VII)**

125 Children, Schools, and Cinema (4). Using popular films as the vehicle, essential aspects of school dynamics and the interaction of schools with students, teachers, and the public are analyzed. Melding educational studies and film studies provides a deeper understanding of the methods used to transmit information and attitudes about schools to the lay public.

126 Ethics and Education (4) F, W, S. Examination of ethics in education and how ethicists frame moral problems. Presentation of major ethical themes that affect education. Analysis of specific models for dealing with ethical goals and developing morality for K–12 students. Offers models for solving ethical dilemmas within an educational context. Prerequisite: Education 50.

128 Exceptional Learners (4) S. An introductory survey of the nature, needs, and education of K–12 children with exceptionalities. Covers the categories and characteristics of exceptionalities, relevant state and federal legislation, and the role of general education teachers in special education.

131 Educational Technology (4) W. Presents an overview of the types and uses of educational technology to support and enhance the K–12 learning experience. Familiarizes students with lesson planning, instructional design, learning theory, and integrating technology into the curriculum. **(IX)**

132 Reading and Writing Enrichment for After-School Programs (4) S. Examines literacy development and the implementation of research-based practices to enrich learners' reading and writing skills in after-school programs. A minimum of 20 hours of after-school program fieldwork is required in order to design and implement literacy enrichment activities. **(IX)**

133 New Approaches in Assessment (4) W. Examines different purposes, forms, and tools for assessing student learning. Topics include summative and formative assessment, testing and standards, student and teacher assessment, uses of technology in assessment, and differences in assessment methods across states and nations.

134 Teaching English Internationally (4) W. Covers methods of teaching English as a foreign language, basic language knowledge for English teachers, the social context of English language teaching around the world, and essential information about securing international employment as an English teacher.

135 Exploring Literacy: Critical Literacy—Instructional Methodology and Implications for Practice in Education (4) S. Focuses on the ways in which readers and writers bring meaning to texts and the interrelationships of language, power, and text. Explores critical literacy through focusing on reading comprehension, writing, discussion, and critical thinking.

136 Teaching and Learning Secondary Science (4) W, S. Explores the field of teaching science, as students are guided through blending theories and classroom methodologies, such as constructivism, experimental inquiry, and interdisciplinary science, while developing skills in presentation, conducting hands-on activities, and offering exciting demonstrations that build curiosity.

137 Art in the Elementary School (4) F, W. Theory and practice in art education for the elementary school classroom. Includes content and pedagogy for future teachers and others interested in the relationship between child development and the production of visual art. **(IX)**

138 Children's Literature in the Elementary Classroom (4) S. Explores the wealth of children's literature that can be integrated into the elementary classroom. Surveys traditional literature, fiction, nonfiction, and poetry that make curriculum accessible to all students. Focuses on literary elements for both reading and creating text.

139 Technology and Literacy (4) S. Examines relationships of new digital media to literacy in home and school environments. Topics include blogs, wikis, fan fiction, social network sites, online research, video games, instant messaging, e-mail, digital imagery, and multimedia production in connection with learning and literacy. Same as Informatics 165.

140A Methods for Elementary Bilingual Teachers (4). Direct observation of bilingual classrooms in local elementary schools, classroom lectures, discussions, and presentations on the culture and language of the bilingual student.

140B Methods for Secondary Teachers of Spanish (4). Communicative approaches to teaching Spanish at the secondary school level. Theory and practice of oral proficiency acquisition techniques. Requires field work. Emphasis placed on training differences for native versus nonnative Spanish speakers.

141A-B-C Jumpstart: Early Language, Literacy, and Social Development (4-4-4) F, W, S. An experiential course integrated with lecture material in the field of child development and education. Students are expected to attend lectures, complete assignments, and commit a total of eight hours per week as mentors of disadvantaged preschool children. Prerequisite: consent of instructor. Same as Psychology 141J-K-L.

143A Classroom Interactions I (4) W. Focuses on research-based instructional strategies for enhancing the learning of secondary mathematics and science. Students learn about adolescent and second-language development to assist them in developing analyzing, teaching, and critiquing lessons for secondary classrooms. Prerequisites: Physical Sciences 105 or Biological Sciences 101; Education 55; satisfactory completion of the lower-division writing requirement.

143B Classroom Interactions II (4) S. Focuses on equity and multicultural education research, special education, and research-based instructional and assessment strategies to assist students in designing, teaching, and assessing lessons that meet the needs of all secondary mathematics and science students. Prerequisites: Physical Sciences 105 or Biological Sciences 101; Education 55 and 143A; satisfactory completion of the lower-division writing requirement. **(VII)**

145 Theories and Pedagogies of Race in Education (4) W. Introduces theoretical frameworks to examine the role of race in American education. Emphasis is placed on introducing students to different race and ethnicity paradigms.

148 Complex Pedagogical Design (6) F. In this Cal Teach capstone course, students design lesson plans and complex instructional units, using approaches such as mathematics and science integration, problem-based instruction, project-based learning, technology, representations, scientific and mathematical analysis/modeling, authentic assessment, contextualization, and designing equitable learning environments. Prerequisites: Physical Sciences 105 or Biological Sciences 101; Education 55, 143A, and 143B.

150 Changing the High School Experience (4) S. Analysis of problems in high school education (e.g., student disengagement and underachievement of disadvantaged) and proposals for changing curriculum, instruction, and school organization. Students suggest own reforms and analyze effective/ineffective school practices.

151 Language and Literacy (4) S. Addresses the linguistic principles and processes that underlie oral and written language proficiency. Emphasis is on how to use phonology, morphology, orthography, semantics, syntax, and pragmatics to support literacy and oral language development for K–12 students. Same as Psychology and Social Behavior 192V.

152F Teaching Mathematics with Technology (4) S. Students learn to use current technologies to facilitate student learning of K–12 mathematics, and gain experience in using technology to design and teach mathematics lessons.

153A Urban Youth and the Development of Literacy through the Arts I (4). Brings together research and practice on innovative instructional strategies for developing urban-student literacy through visual, communicative, and performing arts. UCI students are involved in an intervention at a local school.

153B Urban Youth and the Development of Literacy through the Arts II (4). Building on knowledge gained in Education 153A, focuses on practices for developing urban-student literacy. Students are required to complete 40 hours of fieldwork, participating in an actual intervention at a local school. Prerequisite: Education 153A. **(IX)**

155 Special Topics in Educational Issues and Asian Americans (4). Critical analysis of a variety of historical and contemporary educational issues facing Asian Americans. May be repeated for credit as topics vary. **(VII)**

157 Research Methods in Education (4) S. Covers a variety of research methods, both qualitative and quantitative, in educational contexts. Students have the opportunity to plan, execute, and write up a small research project.

158 Student Teaching Mathematics and Science in Middle/High School (6) W, S. Student teaching includes orientation, seminars, preparation, and assumption of secondary school classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Five days/week and a minimum four hours/day over two quarters. Prerequisites: Physical Sciences 105 or Biological Sciences 101; Education 55, 143A, 143B, and 148.

160 Foundations of Out-of-School Learning (4) F, W. Provides an overview of child and adolescent learning through participation in out-of-school activities and settings. Recognizes the importance of matching out-of-school experiences with the interests, needs, and development level of the students served. Observation-based fieldwork included. May be taken a second time if student is a candidate for a Certification in After-School Education and took course prior to fall 2008. **(IX)**

160L After-School Programs Fieldwork (1 to 2) F, W, S. Supervised fieldwork at an after-school program. Fieldwork is under the direction of an Education faculty member and an after-school program supervisor. Prerequisite: consent of instructor. Pass/Not Pass only. May be repeated for credit for a total of 4 units.

170A Issues and Controversies in Secondary History-Social Studies (4) W. Examines passionate debates about what adolescents should learn in history and social studies classes. Competing priorities between history and current social issues; "heritage" education or critical history; social studies vs. social science; wars over curriculum standards; teaching about moral issues.

170B Teaching and Learning Secondary History-Social Studies (4) S. How adolescents understand history and social issues. Pioneering research on their reasoning about history, politics, and related areas. Examination of typical practices in history and social studies teaching. Improving students' learning through historiographic investigation and information technology resources.

172A Issues and Controversies in Secondary Mathematics (4) W. Examines different perspectives on what mathematical competencies should be emphasized in secondary schools, and how they should be taught. Particular attention to problem solving, algebra and geometry, and issues of equity. Introduction to research on mathematical cognition and teacher beliefs.

172B Teaching and Learning Secondary Mathematics (4) S. How children and adolescents learn to understand mathematics. Research on mathematical cognition, particularly on mathematical problem solving and the learning of algebra, geometry, and calculus. Examination of several innovative instructional programs derived from research on mathematics learning.

173 Cognition and Learning in Educational Settings (4) F, W, S, Summer. Foundational concepts in cognition and development as applied to student learning. Primary topics include historical behaviorism, basic cognitive structure and processes, complex cognition, cognitive development, and motivation. Same as Psychology and Social Behavior 192T. NOTE: Education 173 is a prerequisite for Education 203.

175 Foundations of Education (4). Foundational questions of education are viewed from newly emerging developmental perspectives which treat cognition as embodied action and learning as cultural recapitulation. Historical, sociological, psychological, and philosophical implications of these views toward various aspects of teaching, learning, curriculum, and pedagogy are considered.

176 Psychology of Learning, Abilities, and Intelligence (4) S. Overview of classic positions on the mind, human abilities, and intelligence, especially as related to academic achievement. Contrasting views: psychometric versus information processing; experimental versus correlational research. Prerequisite: introductory course in psychology, or consent of instructor. Same as Psychology and Social Behavior 192U.

177 Geography and Social Issues in K–12 Education (4) S. Examines how K–12 students come to understand the influence of geography on climate, culture, and the environment in which we live. Computer-based resources such as geographic information systems are used to model complex temporal and spatial relationships.

178 Poetry in the K–12 Classroom (2 to 4). Students experience school-day fieldwork in UCI-instructed poetry workshops in bilingual K–12 classrooms. Supporting lectures provide content, pedagogical framework, and practice for fieldwork lessons. Course work includes commenting on student work, composing and presenting field notes, lesson plans, and case studies. May be taken for credit three times.

179 Advanced Composition for Teachers (4). Principles of formal composition and problems of teaching. Selecting handbooks and ancillary reading, marking papers, making assignments, and conducting workshops and tutorials. Prerequisites: satisfactory completion of the lower-division writing requirement and junior standing. Same as Writing 179.

180 Interdisciplinary Topics in Education (4). Analysis of issues in education from interdisciplinary perspectives. Topics covered vary with interests of instructor. May be repeated for credit as topics vary.

181A Principles and Practices of Coaching Sports I (4). Focuses on foundational theories and instructional practices in coaching sports from fourth grade to the collegiate level. Prepares students for the coach's mandatory state certification examination for high school sports in California.

181B Principles and Practices of Coaching Sports II: Field Practicum (4). Building on knowledge gained in Education 181A, focuses on practical experiences of coaching sports. UCI students chose their preferred sport and perform coaching or assistant coaching duties, via a 40-hour volunteer placement in a public school. Prerequisite: Education 181A. **(IX)**

182 Latina/Latino Access and Persistence in Higher Education (4). Introduction to how social, political, and economic forces impact on Latina/Latino racial/ethnic minorities with regard to their access and persistence in the U.S. higher education system. Investigates historical perspectives and theoretical underpinnings of college access and retention research. Same as Chicano/Latino Studies 182. **(VII)**

185 Social Development in Education (4). Examination of contextual, psychosocial, and biological factors contributing to the social development of children and adolescents. Theoretical perspectives, empirical findings, and methodological issues are emphasized. Implications of the scientific evidence for practical and policy decision-making surrounding development are discussed.

190 Principles and Practices of K–6 After School Sports and Fitness (4). Focuses on foundational theories and instructional practices in after-school sports and fitness for K–6 students. Includes a 20-hour field experience in an after-school setting.

193 Directed Studies in Early Childhood Education (4) F, W, S, Summer. Advanced study of early childhood education under the direction of a faculty member, coupled with a community-based practicum. May be repeated for credit. **(IX)**

198 Directed Research in Education (2 to 8) F, W, S, Summer. Individually or in small groups, students are exposed to or participate in work related to a faculty member's research. Students also attend a weekly seminar and complete a research paper or comparable project. Prerequisite: sophomore, junior, or senior standing. May be taken for a total of 12 units, 8 of which maybe used to satisfy requirements for a minor in Educational Studies.

199 Individual Study (1 to 4 per quarter) F, W, S, Summer. Intensified advanced study in areas in which a student has considerable background, under the direction of a faculty member who will guide and evaluate the study.

GRADUATE COURSES

201 Teachers' Lives and the Policy Environment of Teaching (4). Examines research and biographical studies on the nature of teaching and teacher development. Discusses forms of professional development including communities of practice and national board certification. Examines the influence of political structure and educational policy on the lives of teachers. Limited to M.A.T. students only.

202 Outcomes of Schooling/Student Assessment (4). Focuses on establishment of learning goals and assessment tools that are valid for all students, inform educational decisions, and promote educational success. Provides critical examination of different forms of assessment used in K–12 schools, including developmental assessments and appropriate interventions. Limited to M.A.T. students only.

203 Advanced Concepts in Learning and Cognition (4). Theories of cognition and their application to thinking and learning in school settings. Topics include memory, information processing, knowledge representation, problem solving, meta-cognition, and intelligence. Prerequisite: Education 173 or equivalent undergraduate course in learning theory or educational psychology. Limited to M.A.T. students only.

205 Critical Assessment of Teaching Practice and Learning (4). Student articulates a problem in instructional practice and uses research on cognition, assessment, and other tools to understand the problem. Capstone course emphasizes practices of teacher inquiry, reflection, and professional collaboration. Student's written analyses are evaluated as the program's Comprehensive Examination. Limited to M.A.T. students only.

206 Cognition and Pedagogy in Specific School Subjects (4). Reviews cognitive research on comprehension, conceptualization, reasoning, critical thinking, planning, and problem-solving with applications to pedagogy in a specific area of the secondary curriculum. Required for M.A.T. single subject students, unless substitution of Education 207 is authorized by the Department.

207 Cognition and Pedagogy in Quantitative Literacy (4). Reviews research on cognition in elementary mathematics, including numeracy, fractions, probability, proportionality, measurement, geometry, algebra. Emphasizes instructional approaches consistent with this research knowledge. Required for M.A.T. multiple subjects students, unless substitution of Education 206 is authorized by the Department.

210 Language, Literacy, and Discourse (4). Introduces students to the interdisciplinary study of language, literacy, and discourse across historical and educational contexts. Addresses theories of how people learn, interact, and make meaning through a variety of semiotic resources, including oral communication, print, and digital media. Prerequisite: graduate standing or consent of instructor.

211 Writing Theory and Practice (4). Offers an overview of histories, theories, and research in the field of composition studies from 1950 to the present. Addresses the influences of theory and research on teaching practice at K–12 and college levels. Prerequisite: graduate standing or consent of instructor.

212 Literacy and Technology (4). Examines theoretical, historical, and contemporary relationships of technology and literacy. Topics include online communication, multimodality, video games, the use of technology for literacy instruction in schools, and research approaches for investigating literacy development with technology. Prerequisite: graduate standing or consent of instructor.

213 Second Language Learning (4). Examines the social, psychological, and cognitive processes affecting second language development, including a consideration of the learner's first language, input, interaction, and social identity. Prerequisite: graduate standing or consent of instructor.

214 Technology, Education, and Cultures (4). Examines theoretical, historical, and contemporary relationships of technology and learning. Probes the formation of twentieth- and twenty-first-century technology discourses and their material effects on the lives of students and educators. Prerequisite: graduate standing or consent of instructor.

215 Visual Literacy (4). Examines semiotics and poststructural theories for reading both analog and digital images from photography, cinema, television computers, and the Internet. Poses questions of formal interpretation, authorial intent, textuality, intertextuality, and viewer interpretation in social and cultural settings. Prerequisite: graduate standing or consent of instructor.

216 Language Learning with Digital Media (4). Examines the use of new technologies in second and foreign language teaching. Considers historical and theoretical perspectives, current research, and future directions. Topics include online interaction, computer-assisted testing, corpora and concordancing, second language reading and writing, and affect and identity. Prerequisite: graduate standing or consent of instructor.

218 Special Topics in Language, Literacy, and Technology (4). An advanced seminar designed to engage students in highly interactive examination of current issues in language, literacy, and technology. Topics and content will vary by quarter, depending upon the research interests of the faculty and students. Prerequisite: graduate standing or consent of instructor.

222 Research Epistemologies and Methodologies (4). Introduction to epistemological underpinnings of educational research and to a range of research methodologies in education. Includes examination of quantitative and qualitative studies through reading and analyzing contemporary research. Critique of selected research studies pertinent to educational practice and policy. Doctoral students only.

223 Learning and Memory (4). Examines cognitive learning and memory research with implications for education. Readings incorporate basic cognitive theory and mathematics and science classroom learning theory. Topics include problem solving, reasoning, long-term memory, feedback, transfer, and instructional design. Prerequisite: graduate standing or consent of instructor.

224 Social Development and Education (4). Surveys the theory and empirical evidence concerning human social development from infancy to adolescence. Topics include studying how children conceptualize the social world, interact with caretakers, develop social relationships with peers, and how they impact student success. Prerequisite: graduate standing or consent of instructor.

225 Learning, Development, and Culture (4). Explores issues of learning and development through a cultural lens. The interplay between culture and learning and culture and development is analyzed through the discussion of relevant readings from both psychological and anthropological research traditions. Prerequisite: graduate standing or consent of instructor.

227 Thinking and Learning in Social Contexts (4). Examines thinking and learning from a social perspective. Conceptualizes individuals as active participants in their learning, purposefully seeking and constructing knowledge in meaningful social contexts. Theories explored: sociocultural theory, social constructivism, distributed cognition, situated cognition, learning in communities of practice. Prerequisite: graduate standing or consent of instructor.

229 Theories of Human Development (4). Examines developmental theory as a guide for research and practice in education. The evolution of classical development theories and the emergence of new theoretical models are considered. Theoretical perspectives include ecological systems, life course, psychobiology, attachment, and social-cognitive theories. Prerequisite: graduate standing or consent of instructor.

233 Learning Disabilities (4). Explores psychological and educational characteristics of children and adolescents with learning disabilities. Emphasis on the constitutional and environmental factors that contribute to these disabilities and enable optimal functioning. Emphasis on concept of learning disability and educational implications of research literature. Prerequisite: graduate standing or consent of instructor.

234 Psychometrics (4). Introduction to classical test theory, true and observed scores, measurement error, scaled scores, and reliability. Explores construct validity and validation processes, multi-trait multi-method analysis. Introduces item analysis, Rasch analysis, and item response theory. Prerequisite: graduate standing or consent of instructor.

235 Psychology of Reading Acquisition (4). Surveys theory and empirical evidence concerning acquisition, cognitive processes, and consequences of skilled reading. Explores psychological models of skilled reading, how children acquire reading and writing skills in their home and second languages, cognitive consequences of acquiring literacy skills. Prerequisite: graduate standing or consent of instructor.

236 Applied Linguistics and Literacy (4). Examines research in applied linguistics as related to teaching literacy in K–12 instruction. Provides overview of language knowledge required to understand development and instruction of literacy. Topics include English structures and analysis and instructional approaches that promote literacy development. Prerequisite: graduate standing or consent of instructor.

237 Teacher Thinking and Learning (4). Recent research on teacher cognition, including what knowledge teachers bring to their work and how it is used in practice. Examines the nature and development of teachers' knowledge and the relationship between knowledge and practice. Prerequisite: graduate standing or consent of instructor.

238 Special Topics in Learning, Cognition, and Development (4). An advanced seminar designed to engage students in highly interactive examination of current issues in learning, cognition, and development. Topics and content will vary by quarter, depending upon the research interests of the faculty and students. Prerequisite: graduate standing or consent of instructor. May be taken for credit for a total of 10 times.

239 Cognitive Development and Education (4). Examines interrelationships between cognitive development, domain learning, and education. Explores how young children continuously learn and develop knowledge about the world, spending many waking hours in educational settings, and, outside of school, facing myriad novelties and uncertainties to decode. Prerequisite: graduate standing or consent of instructor.

240 Instructional Design and Education Technology (4). Design of high-quality instructional units consistent with current theory and research in cognitive psychology and constructivist-compatible instructional practice and infused with appropriate uses of computer and video technologies. Students design a complete instructional unit using these principles. Limited to M.A.T. students only.

241A Introduction to Educational, Social, and Behavioral Statistics (4). Introductory course for graduate students with a limited background in statistics. Standard topics are covered, through regression analysis, but emphasis is on understanding results rather than on the formal properties of models. Prerequisite: graduate standing or consent of instructor.

241B Introduction to Structural Equation Modeling for Educational, Social, and Behavioral Analysis (4). An introduction to structural equation modeling for students within limited prior course work in statistics. Standard topics are covered, but emphasis is on the appropriate use of techniques and understanding results rather than on the formal, underlying mathematics of the models. Prerequisites: Education 241A or equivalent; graduate standing or consent of instructor.

250 History of School Innovations and Current School Reform Movements (4). Offers an analysis of major school reform movements, both ongoing and those from the past century. Study of the underlying dynamics affecting the interrelationship between schools and society and the implications of these relationships. Prerequisite: graduate standing or consent of instructor.

251 Educational Policy and Politics (4). An in-depth study of topics relevant to educational reform and policy-making. Topics include: the policy-making process, the role of values and interest groups, policy analysis, equality of educational opportunity, systemic reform, implementation, and politics at the school site. Prerequisite: graduate standing or consent of instructor.

252 Social Organization of Schools and Classrooms (4). Examines research about the organizational practices of schools and teachers and how they affect student outcomes. Topics include class size, tracking, organizational practices influencing school climate, and teachers' approaches to instruction. Prerequisite: graduate standing or consent of instructor.

253 Culture Change, Acculturation, and School Achievement (4). Explores different culture change paths of Mexican people, beginning in Mexico and later in southwest United States. Elaborates on social movements and ethnic identity trajectories marking growth and evolution, especially as culture change relates to acculturation and school achievement patterns.

254 College Access and Persistence (4). Introduction to how social, political, and economic forces impact college access and persistence in the U.S. higher education system. Investigates historical perspectives and theoretical underpinnings of college access and retention research and the link between K–12 schooling and postsecondary stratification. Prerequisite: graduate standing or consent of instructor.

255 Immigration and the New Second Generation (4). Focuses on Asian, Latino, and Black children of immigrants. Investigates how today's second generation adapts, incorporates into the U.S. social structure, transforms the social and economic landscape. Explores assimilation, immigrant families/communities, language, racial/ethnic identities, gender, education, changing U.S. racial structure. Prerequisite: graduate standing or consent of instructor.

256 Critical Case Studies in Education (4). Examines single and multiple case studies as a method for investigating educational theory, practice, and policy. Explores types of questions that can be answered with case study research and designs, data analysis techniques, format, and style of writing case studies. Prerequisite: graduate standing or consent of instructor.

257 Social Capital and Student Achievement (4). Examines strategies that have proven successful in encouraging both high student achievement and a supportive school culture. Extended case studies are used to probe how interpersonal interactions at the school site can work to stimulate or discourage academic commitment. Prerequisite: graduate standing or consent of instructor.

258 Special Topics in Educational Policy and Social Context (4). An advanced seminar designed to engage students in highly interactive examination of current issues in educational policy and social context. Topics and content will vary by quarter, depending upon the research interests of the faculty and students. Prerequisite: graduate standing or consent of instructor. May be taken for credit for a total of 10 times.

259A First-Year Seminar (2 to 4). Graduate seminar for entering Ed.D students. Employment of skills such as conducting literature reviews, types and styles of writing, use of the Internet. Also examines different issues related to educational research and methodologies. Doctoral students only. *Not offered 2010-11.*

261 Social and Cultural Foundations of Education (4). Provides a critical understanding of the social and cultural foundations of education through reproduction theory. Explores the unique ways in which culture and power intersect within schools and schooling systems to reproduce and resist educational inequality. Prerequisite: graduate standing or consent of instructor.

262 Visual Analysis of Social Science Data (4). Examines techniques for representing social science data graphically as a means of gaining understanding and insight into the data. Topics include principles of information design, depicting numerical data graphically, showing patterns and changes, effective separation and layering of information. Prerequisite: graduate standing or consent of instructor.

263 Social and Educational Intervention (4). Examines theories and practices aimed at preventing social and educational adjustment problems and promoting positive development. Social/educational intervention is addressed from different conceptual frameworks (deficit reduction vs. competence promotion) and methodological approaches (person-centered vs. ecological). A developmental approach to intervention is emphasized. Doctoral students only.

264 Economic Foundations of Education and Social Policy (4). Beginning/intermediate microeconomics course provides students with an introduction to how economists think about household decision-making, markets, benefit-cost analysis, social policy issues in general and education policy in particular. Prerequisite: graduate standing or consent of instructor.

265 Applied Regression Analysis for Education and Social Research (4). Provides students with a working knowledge of multiple regression and the statistical analysis of longitudinal data. Topics include a review of the OLS regression model, event-history methods, and various other techniques for analyzing longitudinal data. Prerequisites: Education 241B or 288B; graduate standing or consent of instructor.

266 Design of Learning Environments (4). Theory and practice of designing innovative learning environments. New models of classroom interaction and technology use for new cognitive and social roles. Design cognition, and social learning theories and research methods for the design and enactment of learning environments. Prerequisite: graduate standing or consent of instructor.

267 Classroom Research Methods (4). Uses students' research problems as the basis for exploring methods—teacher and student observation, interview, case studies, think alouds. Intended for doctoral students with a specific research question and very good grounding in the literature related to their question. Prerequisite: graduate standing or consent of instructor.

274 Studies of Professional and Staff Development (4). Research and theory of effective strategies for professional and staff development. Topics include: adult learning as related to professional growth of teachers, staff development as vehicle for systemic reform, reforms to enhance teacher professionalization and empowerment. Limited to doctoral students only.

275A School Law and Political Relations (4). Legal framework of schools and public education. Political jurisdictions affecting educational policy. Influence of legal aspects. Political and sociological forces directly and indirectly affecting school practices. Theory of individual and group dynamics in achieving compromise, consensus, and coalitions. Prerequisite: graduate standing or consent of instructor.

276B Studies of School Finance and Political Economy (4). Fundamental fiscal concepts applied to schooling. Topics include equity and inequalities in resource allocation, public school revenue sources and expenditure patterns, the politics of school finance, public versus private-sector supply of schooling, and the supply and demand for teachers. Prerequisite: graduate standing or consent of instructor.

277B School Restructuring and Resource Allocation (4). Concepts and research on school change at the site level. Topics include: structure and use of physical environment, organization of school day and use of time, use of teachers and other staff, changes in governance and school-community relations. Prerequisite: graduate standing or consent of instructor.

278A Cultural and Socioeconomic Diversity (4). Contemporary issues of cultural, socioeconomic, and language diversity in public education. Ethnic, racial, and religious composition of the State and local community. Programs and procedures for meeting instructional needs of limited-English-proficient pupils and involving the family in school activities. Prerequisite: graduate standing or consent of instructor.

278B Studies of Diversity and Inequality in Education (4). Study of relationships between individual diversity, social inequality, and education. How differences in socioeconomic status, race, culture, and gender translate in the educational process and affect educational outcomes. Addresses issues such as educational access, social mobility, and social reproduction. Prerequisite: graduate standing or consent of instructor.

280 Special Topics in Education (2 to 8). Provides practitioners at the advanced degree level with insight and leadership skills for working with increasingly diverse school populations. Content varies with interest of the students and instructors. May focus on specific populations or broader content area such as education reform in California. Doctoral students only. May be taken for credit three times as topics vary.

281 Evaluation of Educational Programs (4). Alternative approaches to formative and summative evaluation of educational programs. Standards for effective evaluations. Epistemological, political, and practical issues in designing and conducting evaluations. Students critique specific studies relevant to educational administration and policy-making and design an evaluation. Corequisite: Education 279. Doctoral students only.

282 Graduate Seminar in the History of the Philosophy of Education (4). Draws upon results in the historical development of the philosophy of education from Plato, Quintillian, Augustine, Locke, Rousseau, to more contemporary thinkers such as Dewey, Freire, Egan, and Rorty.

283 Qualitative Research Methods in Education (4). Examines the design and implementation of qualitative research studies in education. Topics include theoretical foundations of qualitative research, ethical access to research sites and participants, conducting interviews and participant observation, and methods and software for qualitative data analysis. Prerequisite: Education 222 or consent of instructor

284 Survey Research Methods in Education (4). Examination of survey research methods and their applications to educational research and evaluation. Attention to types of surveys, research design and sampling, survey construction, development of survey questions, response formats, data collection, analysis of survey data, and reporting survey results. Doctoral students only.

285 Theories of Learning and Cognition (4). Overview of theories applicable to learning in schools and extracurricular contexts. Cognitive, psychometric, behavioral, and neuroscience perspectives are applied to such topics as memory, knowledge structures, problem solving, motivation, self-referent beliefs, expertise, assessment, and cognitive abilities, including intelligence. Prerequisite: graduate standing or consent of instructor.

286 Discourse Analysis (4). Examines the methodological tradition of discourse analysis as it has been applied by researchers in language and literary education for both in and out-of-school settings. Prerequisite: graduate standing or consent of instructor.

287 Quantitative Data Analysis in Educational Research and Evaluation (4). Instruction and practice in statistical aspects of survey-based evaluations and quantitative research in education. Includes sampling, coding open-ended information, data management, scale construction, statistical analysis, and presentation of findings. Students analyze two data sets—a district-based evaluation and a national survey—using SPSS. Prerequisite: graduate standing or consent of instructor.

288A Educational, Social, and Behavioral Statistics (4). Designed for graduate students with previous course work in statistics, including experience with statistical software such as SPSS. The emphasis is on regression analysis and the general linear model. Students learn to analyze real data using Stata software. Prerequisites: course work in statistics and experience with statistical software such as SPSS; graduate standing or consent of instructor. Formerly Education 288.

288B Structural Equation Modeling for Educational, Social, and Behavioral Analysis (4). Rigorous introduction to structural equation modeling for students with strong prior course work in statistics. Topics include path diagrams, SEM with observed variables, factor analysis, SEM with latent variables. Maximum likelihood estimating, goodness-of-fit measures, nested models, related topics. Prerequisites: Education 288A or equivalent; graduate standing or consent of instructor.

289 Use of Video in Educational Research (4). Provides students with conceptual and methodological tools for using video in educational research. Students work with their own video data or with publicly accessible databases. Prerequisite: graduate standing or consent of instructor.

292 Scholarship Tools and Information and Communication Technologies for Doctoral Students (4). Examination of doctoral study tools, including computer applications, multimedia presentation technologies, digital libraries and electronic search techniques, graduate study resources on the World Wide Web, bibliographic software, and collaborative online communities and listserves. Doctoral students only.

293 Advanced Academic Writing: Preparation for the Qualifying Paper (4). Focuses on the development and refinement of students' qualifying papers related to advancement to candidacy within the CSU/UCI Ed.D program. Organized around assessment criteria for the qualifying papers: theoretical framework, reasoning, writing quality, and scholarly style. Satisfactory/Unsatisfactory only. Doctoral degree candidates only.

294 Dissertation Planning and Design (4). Prepares the doctoral student to write an outstanding dissertation proposal. In workshop format, students complete a draft dissertation proposal that includes the Introduction, Conceptual Framework, Methodology, and References. Students also develop a timeline for conducting their dissertations. Satisfactory/Unsatisfactory only. Doctoral degree candidates only.

295A-B-C Directed Research (4-4-4). Three-quarter independent study sequence taken under the direction of a faculty member who guides the student's research in the student's chosen area. Includes development of research proposal, human subjects protocol, conference proposal, and final research paper of publishable quality. Prerequisite: graduate standing or consent of instructor.

298 Independent Study (2 to 8). Independent research on topics related to education. May be repeated for credit.

299 Dissertation Research (2 to 8). Specifically designed for students researching and writing their dissertations. Doctoral students only. Satisfactory/Unsatisfactory only. May be repeated for credit.

CREDENTIAL COURSES

301 Directed Elementary Field Experiences in Diverse Schools (1). Field work experiences and seminars to provide introduction to the California Teaching Performance Expectations, including guidelines for professional expectations, observation and participation in classrooms, instructional planning, classroom management, and formative experiences and preparation for the State-mandated Teaching Performance Assessment. Limited to students accepted into the Teacher Credential Program. Satisfactory/Unsatisfactory only.

302 Directed Secondary Field Experiences (2). Introduction to California Teaching Performance Expectations with guidance and support in meeting requirements for a California teaching credential; strategies for gradually increasing participation in schools and classrooms, including interaction with students, assumption of routines, grading papers, and teaching. Limited to students accepted into the Teacher Credential Program.

303 Learning to Learn from Teaching in Elementary Schools (3). Preparation for elementary school teaching that provides analytic tools for observing and reflecting on instruction, examining how student thinking is demonstrated, understanding components of and relationships between the teaching and learning process and planning effective instruction including innovative teaching practices. Limited to students accepted into the Teacher Credential Program. Formerly Education 304.

304 Student Teaching in the Elementary Schools (4 to 12). Student teaching experiences including orientation, seminars that prepare candidates for assumption of classroom instructional responsibilities in accordance with State credentialing requirements. Four full days a week of student teaching in public school elementary classrooms in winter quarter and five full days in spring quarter. Limited to students accepted into the Teacher Credential Program. May be taken for credit twice. Formerly Education 303.

305 Learning to Learn from Teaching (4). Analytic tools for (1) observing and reflecting on observed instruction; (2) examining student thinking and the relationship between teaching and learning; (3) understanding particular components of the teaching/learning process; and (4) planning effective instruction including innovative teaching practices. Limited to students accepted into the Teacher Credential Program.

306 Supervised Teaching in Bilingual Education, Elementary (4 to 12). Student teaching experiences in bilingual public school classrooms to include orientation, regular seminars, and preparation for bilingual classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Limited to students accepted into the Teacher Credential Program. May be repeated for credit unlimited times.

307 Student Teaching in Intermediate/Secondary School (2 to 16). Student teaching experience to include orientation, seminars, and preparation for and assumption of secondary school classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Five full days a week in both winter and spring quarters. Limited to students accepted into the Teacher Credential Program. May be taken for credit of total of 20 units.

308 Performance Assessment for California Teachers, Multiple Subjects (1). Preparation and technical support for multiple subjects teacher candidates to complete State-required Teaching Performance Assessment for the California preliminary credential. Includes assistance in planning, teaching/videotaping, assessment and reflection, and document production. Limited to students accepted into the Teacher Credential Program. Satisfactory/Unsatisfactory only. May be taken for credit twice.

309 Supervised Teaching in Bilingual Education, Secondary (4 to 12). Student teaching experiences in bilingual public school classrooms to include orientation, regular seminars, and preparation for bilingual classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Limited to students accepted into the Teacher Credential Program. May be repeated for credit unlimited times.

310 PACT Teaching Event (1). Preparation and technical support for teacher candidates to complete the required Teaching Performance Assessment for California credential licensure. Structured support for planning, videotaping, and document production occurs in meetings scheduled to coincide with the timeline for the project. Limited to students accepted into the Teacher Credential Program. May be taken for credit twice.

315 Preparation for Teaching in the Secondary School (4). Secondary curriculum and methodology, including instructional planning, teaching strategies, classroom management, evaluation, cultural and linguistic considerations and interpersonal skills. Application of these to fieldwork experience in preparation for teaching responsibilities assumed in secondary schools. Limited to students accepted into the Teacher Credential Program.

317 Intern Teaching in the Secondary School: Single Subject Instruction (4 to 16). A paid intern practicum (usually one year) cosponsored by an employing school district and the UCI Department of Education. Limited to students accepted into the Teacher Credential Program. May be repeated for credit unlimited times.

319 Directed Field Experiences (4). Observation, participation, and teaching in diverse public school classrooms. Application of theory and pedagogy in field work classrooms. Limited to students accepted into the Teacher Credential Program.

320 Teaching Physical Education and Creating Healthy Environments for Learning in Elementary Schools (4). Methods of teaching physical education and creating healthy environments for student learning in elementary schools. Introduction of California content standards and frameworks with appropriate pedagogy. Personal, family, school, community factors and legal responsibilities of teachers. Academic, physical, emotional, social well-being of students. Limited to students accepted into the Teacher Credential Program.

321 Curriculum and Methods for Elementary School Social Studies (3). Description, scope, sequence, and methods of teaching social studies and inquiry in grades K–8. Includes utilization of California State Framework for Teaching History/Social Science and addresses current aspects and trends in multicultural education. Limited to students accepted into the Teacher Credential Program.

322 Curriculum and Methods for Elementary School Mathematics (4). Scope, sequence, and methods of teaching mathematics at all levels of elementary school. Presented through lectures, discussions, demonstrations, and exploration of a variety of materials. Covers how to plan lessons, motivate students, diagnose difficulties, and evaluate learning in mathematics. Limited to students accepted into the Teacher Credential Program.

323 Curriculum and Methods for Elementary School Science (4). Prospective elementary teachers learn how to teach science in grades K–8. Covers State science requirements, a variety of teaching methods, criteria for selecting science curricular materials, and how to plan science lessons, units, experiments, projects, and demonstrations. Limited to students accepted into the Teacher Credential Program. Same as Ecology and Evolutionary Biology 324.

324 Curriculum and Methods for Elementary School Language Arts Integrated with Social Studies (4). An integrated approach to language arts and social studies instruction at the K–6 level based on California State English/Language Arts and Social Studies Frameworks and Standards. Focus on teaching content through literature and writing and providing access for all learners. Limited to students accepted into the Teacher Credential Program.

325 Teaching the Visual and Performing Arts in Elementary School (2). Introduction to the issues and practices, including student diversity, academic literacy, and interdisciplinary content, involved in integrating the California visual and performing arts curriculum framework and academic content standards with developmentally appropriate teaching strategies for the elementary classroom. Limited to students accepted into the Teacher Credential Program or consent of instructor.

326 Curriculum and Methods for Elementary School Reading (4). Teaching an integrated reading/language arts program in the elementary classroom. Implementing theories, principles, and methods which are research and reality-based. Creating a child-centered, language-rich program to meet needs of children in multicultural/multilingual settings. Limited to students accepted into the Teacher Credential Program.

327 Foundations of Equity and Diversity for Elementary School Teachers (2). Principles of educational equity and diversity. Professional responsibilities of teachers and pedagogy for implementation in elementary school practices and subject matter content that provides all students equitable access to core curriculum. Limited to students accepted into the Teacher Credential Program.

328 Theory and Methods of Instruction of Special Populations in the General Education Classroom, Elementary (2). Knowledge, skills, and strategies to teach special populations at the elementary level. Categories of disability and exceptionality. Legislation pertaining to the education of special populations. Role of general education teacher in special education process. Differentiated instruction and inclusive environments. Limited to students accepted into the Teacher Credential Program.

329 Theories and Methods of English Language Development Applied to Elementary Students (4). Theories and methods of English language development and the instruction of English language learners, with a focus on elementary students. Includes language acquisition theory, language and content, assessment strategies, and preparation of curricula and instruction for grades K–6 English language learners. Limited to students accepted into the Teacher Credential or M.A.T. programs, or consent of instructor.

330 Child Development in Education (4). It is essential for multiple subject teachers to understand how child development impacts and is driven by educational contexts. Examines educational implications of children's cognitive, language, and social development. The roles of families and classrooms are considered. Limited to students accepted into the Teacher Credential Program.

331 Instructional Technology: Resources for the Multiple Subject Classroom (3). Issues and techniques in uses of computer-based and media technologies in the multiple subject classroom: social implications and professional responsibilities, productivity tools to enhance student thinking skills, and strategies for instruction and management. Limited to students accepted into the Teacher Credential Program.

334 Literacy and Technology in the Secondary Classroom (2). With a view of literacy expanded beyond typological print, students learn: (1) strategies for incorporating, (2) tools for evaluating and selecting, and (3) learning theories for understanding how information and communication technologies and online resources contribute to general and disciplinary literacy. Limited to students accepted into the Teacher Credential Program.

335 Secondary School Curriculum (4) F. An introduction to the historical, philosophical, and legal antecedents of secondary school education. Emphasis on the contextual nature of schooling and how various influences and issues impact the school curriculum. National, state, and local standards regarding specific curricular areas are examined. Limited to students accepted into the Teacher Credential Program.

336 Methods of Teaching Languages other than English in the Secondary Schools (4) F. Prepares future teachers of foreign language or primary/home language. Emphasizes hands-on, practical strategies for communication-based instruction and authentic assessment, in reading, writing, listening, speaking, and culture. Limited to students accepted into the Teacher Credential Program.

337 Methods of Teaching Social Science in the Secondary School (4) F. Theories, strategies, and methodologies related to the teaching of history and social science in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the History-Social Science Framework for California. Limited to students accepted into the Teacher Credential Program.

338 Methods of Teaching English in the Secondary School (2 to 4) F, S. Introduction to teaching reading, writing, and speaking skills in the secondary school. Emphasis upon an integrative approach to the teaching of literature, composition, and grammar consistent with the California State Framework. Practice in the design of lesson plans that are both integrated and cumulative. Limited to students accepted into the Teacher Credential Program. May be taken for a total of 4 units.

339 Methods of Teaching Visual and Performing Arts in the Secondary Schools (4) F. Theory, curriculum, and strategies for teaching visual and performing arts in the secondary school. Emphasis on the planning, delivery, and assessment of lessons consistent with California State Framework and content standards. Limited to students accepted into the Teacher Credential or M.A.T. programs.

340 Methods of Teaching Mathematics in Secondary School (2 to 4). Theories, strategies, and methodologies related to the teaching of mathematics in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the Mathematics Framework for California and the recommendations of professional organizations. Limited to students accepted into the Teacher Credential Program. May be taken for a total of 4 units.

341 Teaching Science in Secondary School (4). Prospective secondary science teachers learn how to teach science in grades 7–12. Covers State science requirements, a variety of teaching methods, criteria for selecting science curricular materials, and how to plan science lessons, units, experiments, projects, and demonstrations. Limited to students accepted into the Teacher Credential Program. Same as Ecology and Evolutionary Biology 341.

342 Applied Instructional Strategies in Secondary Schools (4). Application of pedagogy and research to practice teaching experiences in the secondary schools. A continuation of the methodology course series with an emphasis on the needs of students with culturally diverse backgrounds. Limited to students accepted into the Teacher Credential Program. May be taken for credit twice. Education 342 and 342A-B may not both be taken for credit.

342A-B Applied Instructional Strategies in Secondary Schools (2-2) Same description as Education 342. Conducted in a five-week format. Limited to students accepted into the Teacher Credential Program. May be taken for credit twice. Education 342A-B and 342 may not both be taken for credit.

343 Pre-Intern Methods of Teaching Subject Matter (1). Preliminary issues in teaching subject matter in the secondary schools. Centered on development of competencies needed to assume intern teaching position and concurrent with intensive fieldwork prior to internship, this course explores theories, strategies, and methodologies related to subject matter teaching with an emphasis on diversity of students. Satisfactory/Unsatisfactory only. Corequisites: Education 315 and 319.

344 Applied Instructional Strategies in Secondary School Sciences (4). Application of pedagogy and research to practice science teaching experiences in the secondary schools. A continuation of the Education 340 series with an emphasis on the needs of students with culturally diverse backgrounds. Limited to students accepted into the Teacher Credential Program. May be taken twice for credit. Same as Ecology and Evolutionary Biology 344.

346 Reading and Writing in the Middle School and High School Classrooms (4). Emphasis is placed upon understanding the literacy processes (listening, speaking, thinking, reading, and writing) as they relate to all Single Subject areas. Teachers are guided to integrate literacy-related strategies with curriculum-based goals supported in the California State Frameworks. Limited to students accepted into the Teacher Credential Program.

347A, B Culture, Diversity, and Educational Equity (2, 2). Survey of the history of and social theories about the origins and consequences of U.S. racial, gender, and social inequality and the effects of poverty and racism on the educational opportunities and outcomes of minority groups in the United States. Limited to students accepted into the Teacher Credential Program. Formerly Education 347.

348 Theory and Methods of Instruction of Special Populations in the General Education Classroom, Secondary (2). Knowledge, skills, and strategies to teach special populations at the secondary level. Categories of disability and exceptionality. Legislation pertaining to the education of special populations. Role of general education teacher in special education process. Differentiated instruction and inclusive environments. Limited to students accepted into the Teacher Credential Program.

349 Theories and Methods of English Language Development Applied to Secondary Students (4). Theories and methods of English language development and the instruction of English language learners, with a focus on secondary students. Includes language acquisition theory, language and content, assessment strategies, and preparation of curricula and instruction for grades 7–12 English language learners. Limited to students accepted into the Teacher Credential or M.A.T. programs, or consent of instructor.

350 Adolescent Development in Education (4). Secondary teachers must understand adolescent physical, cognitive, emotional, and social development, particularly how educators can promote healthy adjustment in their students. Focuses on why and how changes occur in each of these areas as children grow older. Limited to students accepted into the Teacher Credential Program.

351 Instructional Technology: Resources for the Single Subject Classroom (3). Issues and techniques in uses of computer-based and media technologies in the single subject classroom: social implications and professional responsibilities, productivity tools to enhance student thinking skills, and strategies for instruction and management. Limited to students accepted into the Teacher Credential Program.

352 Creating a Supportive and Healthy Environment for Student Learning in the Secondary Classroom (2). Creation of healthy environments for student learning in secondary classrooms. Personal, family, school, community, environmental factors. Academic, physical, emotional, social well-being of students. Legal responsibilities of teachers related to student health, safety. Communication with family and use of community resources. Limited to students accepted into the Teacher Credential Program.

398 Special Topics (3). Meets the induction and program planning requirements for students enrolled in the Professional Administrative Services Credential. Also serves as the final course in the program, wherein the candidate, the University instructor, and a representative of the involved school district assess and evaluate candidate competency. Open to Professional Administrative Services Credential students only. May be taken for credit twice.

399 University Teaching (1 to 4) F, W, S, Summer. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

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Ayman Mosallam, Ph.D. The Catholic University of America, *Professor of Civil and Environmental Engineering and of Chemical Engineering and Materials Science,* Registered Professional Structural Engineer

Daniel R. Mumm, Ph.D. Northwestern University, *Associate Professor of Chemical Engineering and Materials Science*

Zoran Nenadic, D.Sc. Washington University, *Assistant Professor of Biomedical Engineering and of Electrical Engineering and Computer Science*

Hung D. Nguyen, Ph.D. North Carolina State University, *Assistant Professor of Chemical Engineering and Materials Science*

Mikael Nilsson, Ph. D. Chalmers University of Technology, *Assistant Professor of Chemical Engineering and Materials Science*

Betty H. Olson, Ph.D. University of California, Berkeley, *Professor of Civil and Environmental Engineering and of Environmental Health, Science, and Policy*

Dimitri Papamoschou, Ph.D. California Institute of Technology, *Associate Dean for Academic Affairs of The Henry Samueli School of Engineering and Professor of Mechanical and Aerospace Engineering*

Gerard C. Pardoen, Ph.D. Stanford University, *Professor Emeritus of Civil and Environmental Engineering*, Registered Professional Engineer

Simon Penny, Graduate Diploma in Sculpture, Sydney College of the Arts, New South Wales, *Professor of Electrical Engineering and Computer Science and of Studio Art*

Regina Ragan, Ph.D. California Institute of Technology, *Assistant Professor of Chemical Engineering and Materials Science*

Roger H. Rangel, Ph.D. University of California, Berkeley, *Professor of Mechanical and Aerospace Engineering*

Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Professor of Civil and Environmental Engineering*

David J. Reinkensmeyer, Ph.D. University of California, Berkeley, *Professor of Mechanical and Aerospace Engineering and of Biomedical Engineering*

Stephen G. Ritchie, Ph.D. Cornell University, *Director of the Institute of Transportation Studies and Professor of Civil and Environmental Engineering*

Diego Rosso, Ph.D. University of California, Los Angeles, *Assistant Professor of Civil and Environmental Engineering and of Chemical Engineering and Materials Science*

G. Scott Samuelsen, Ph.D. University of California, Berkeley, *Director of the National Fuel Cell Research Center, Director of the Advanced Power and Energy Program, Professor of Mechanical and Aerospace Engineering, and Henry Samueli Endowed Chair,* Registered Professional Engineer

Brett F. Sanders, Ph.D. University of Michigan, Ann Arbor, *Professor of Civil and Environmental Engineering*

Jean-Daniel M. Saphores, Ph.D. Cornell University, *Director of the Graduate Program in Transportation Science and Associate Professor of Civil and Environmental Engineering, Economics, and Planning, Policy, and Design*

Jan Scherfig, Ph.D. University of California, Berkeley, *Associate Director of the Urban Water Research Center and Professor Emeritus of Civil and Environmental Engineering*, Registered Professional Engineer

William E. Schmitendorf, Ph.D. Purdue University, *Professor Emeritus of Mechanical and Aerospace Engineering*

Robin Shepherd, Ph.D. University of Canterbury; D.Sc. University of Leeds, *Professor Emeritus of Civil and Environmental Engineering*, Registered Professional Engineer

Phillip C.-Y. Sheu, Ph.D. University of California, Berkeley, *Professor of Electrical Engineering and Computer Science and of Biomedical Engineering*

Frank G. Shi, Ph.D. California Institute of Technology, *Professor of Chemical Engineering and Materials Science and of Electrical Engineering and Computer Science*

Masanobu Shinozuka, Ph.D. Columbia University, *UCI Distinguished Professor of Civil and Environmental Engineering,* Registered Professional Engineer

Andrei M. Shkel, Ph.D. University of Wisconsin, Madison, *Professor of Mechanical and Aerospace Engineering, Electrical Engineering and Computer Science, and Biomedical Engineering*

Athanasios Sideris, Ph.D. University of Southern California, *Professor of Mechanical and Aerospace Engineering*

William A. Sirignano, Ph.D. Princeton University, *Professor of Mechanical and Aerospace Engineering, and Henry Samueli Endowed Chair*

Jack Sklansky, D.Sc. Columbia University, *Professor Emeritus of Electrical Engineering and Computer Science,* Registered Professional Engineer

Keyue M. Smedley, Ph.D. California Institute of Technology, *Professor of Electrical Engineering and Computer Science*

Soroosh Sorooshian, Ph.D. University of California, Los Angeles, *Director of the Center for Hydrometeorology and Remote Sensing (CHRS), and UCI Distinguished Professor of Civil and Environmental Engineering and of Earth System Science*

Allen R. Stubberud, Ph.D. University of California, Los Angeles, *Professor Emeritus of Electrical Engineering and Computer Science,* Registered Professional Engineer
Lizhi Sun, Ph.D. University of California, Los Angeles, *Professor of Civil and Environmental Engineering and of Chemical Engineering and Materials Science*
A. Lee Swindlehurst, Ph.D. Stanford University, *Professor of Electrical Engineering and Computer Science*
Harry H. Tan, Ph.D. University of California, Los Angeles, *Professor Emeritus of Electrical Engineering and Computer Science*
William C. Tang, Ph.D. University of California, Berkeley, *Professor of Biomedical Engineering and of Electrical Engineering and Computer Science*
Bruce Tromberg, Ph.D. University of Tennessee, *Director of the Beckman Laser Institute and Professor of Surgery, Biomedical Engineering, and Physiology and Biophysics*
Chen S. Tsai, Ph.D. Stanford University, *UCI Chancellor's Professor of Electrical Engineering and Computer Science*
Wei Kang (Kevin) Tsai, Ph.D. Massachusetts Institute of Technology, *Professor Emeritus of Electrical Engineering and Computer Science*
Lorenzo Valdevit, Ph.D. Princeton University, *Assistant Professor of Mechanical and Aerospace Engineering and of Chemical Engineering and Materials Science*
Vasan Venugopalan, Sc.D. Massachusetts Institute of Technology, *Professor of Chemical Engineering and Materials Science, Biomedical Engineering, and Surgery (Beckman Laser Institute)*
Benjamin F. Villac, Ph.D. University of Michigan, *Assistant Professor of Mechanical and Aerospace Engineering*
Roberto Villaverde, Ph.D. University of Illinois, Urbana, *Professor Emeritus of Civil and Environmental Engineering,* Registered Professional Engineer
Jasper A. Vrugt, Ph.D. University of Amsterdam, *Assistant Professor of Civil and Environmental Engineering*
Szu-Wen Wang, Ph.D. Stanford University, *Assistant Professor of Chemical Engineering and Materials Science and of Biomedical Engineering*
Yun Wang, Ph.D. Pennsylvania State University, *Assistant Professor of Mechanical and Aerospace Engineering*
H. Kumar Wickramasinghe, Ph.D. University of London, *Professor of Electrical Engineering and Computer Science, Biomedical Engineering, Chemical Engineering and Materials Science, and Henry Samueli Endowed Chair*
Jann N. Yang, D.Sc. Columbia University, *Professor of Civil and Environmental Engineering,* Registered Professional Engineer
Albert Yee, Ph.D. University of California, Berkeley, *Department Chair and Professor of Chemical Engineering and Materials Science, and Professor of Biomedical Engineering and Chemistry*
Farzin Zareian, Ph.D. Stanford University, *Assistant Professor of Civil and Environmental Engineering*

Adjunct Professors

Jacob (Jack) Brouwer, Ph.D. Massachusetts Institute of Technology, *Associate Adjunct Professor of Mechanical and Aerospace Engineering*
Xiaogang Gao, Ph.D. University of Arizona, *Adjunct Professor of Civil and Environmental Engineering*
Kuo-lin Hsu, Ph.D. University of Arizona, *Associate Adjunct Professor of Civil and Environmental Engineering*
Bisher Imam, Ph.D. University of Arizona, *Associate Adjunct Professor of Civil and Environmental Engineering*
Daniel D. Joseph, Ph.D. Illinois Institute of Technology, *UCI Distinguished Adjunct Professor of Mechanical and Aerospace Engineering*
Robert H. Liebeck, Ph.D. University of Illinois, Urbana, *Adjunct Professor of Mechanical and Aerospace Engineering*
Vincent McDonell, Ph.D. University of California, Irvine, *Adjunct Professor of Mechanical and Aerospace Engineering*
Sayed (Ali) Mirnajafizadeh, Ph.D. University of South Australia, *Assistant Adjunct Professor of Biomedical Engineering*
Mehran Moshfeghi, Ph.D. Bristol University, *Associate Adjunct Professor of Electrical Engineering and Computer Science*
Henry Samueli, Ph.D. University of California, Los Angeles, *UCI Distinguished Adjunct Professor of Electrical Engineering and Computer Science*
William Randall Seeker, Ph.D. Kansas State University, *Adjunct Professor of Mechanical and Aerospace Engineering*
Andrew A. Shapiro, Ph.D. University of California, Irvine, *Associate Adjunct Professor of Electrical Engineering and Computer Science*
Shirley C. Tsai, Ph.D. California Institute of Technology, *Adjunct Professor of Chemical Engineering and Materials Science*
David A. Whelan, Ph.D. University of California, Los Angeles, *Adjunct Professor of Electrical Engineering and Computer Science*
Homayoun Yousefi'zadeh, Ph.D. University of Southern California, *Associate Adjunct Professor of Electrical Engineering and Computer Science*

Overview

The academic mission of The Henry Samueli School of Engineering has been developed to be consistent with the missions and goals set for it by the State of California, the University of California, and the University of California, Irvine (UCI) campus. Specifically, the academic mission of the School is to educate students, at all levels, to be the best engineers and leaders in the nation and world by engaging them in a stimulating community dedicated to the discovery of knowledge, creation of new technologies, and service to society.

The individual engineering and related programs have published program objectives that are consistent with the missions and goals of the University of California and UCI, The Henry Samueli School of Engineering, and the Engineering Accreditation Commission (EAC) of ABET.

The School offers undergraduate majors in Aerospace Engineering (AE), Biomedical Engineering (BME), Biomedical Engineering: Premedical (BMEP), Chemical Engineering (ChE), Civil Engineering (CE), Computer Engineering (CpE), Computer Science and Engineering (CSE, a jointly administered program with the Donald Bren School of Information and Computer Sciences), Electrical Engineering (EE), Engineering (a general program, GE), Environmental Engineering (EnE), Materials Science Engineering (MSE), and Mechanical Engineering (ME). The undergraduate majors in Aerospace, Biomedical, Chemical, Civil, Computer, Electrical, Environmental, Materials Science, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700. The undergraduate major in Biomedical Engineering: Premedical (BMEP) is not designed to be accredited, therefore is not accredited by ABET.

Aerospace Engineering considers the flight characteristics, performance, and design of aircraft and spacecraft. An upper-division series of courses in aerodynamics, propulsion, structures, and control follows a common core with Mechanical Engineering. The skills acquired in those courses are integrated in the capstone aerospace design course. The intent of the program is to produce highly proficient engineers who can tackle the aerospace engineering challenges of the future. See page 241.

Biomedical Engineering applies engineering principles to solve complex medical problems and focuses at improving the quality of health care by advancing technology and reducing costs. Examples include advanced biomedical imaging systems, the design of microscale diagnostic systems, drug delivery systems, and tissue engineering. Specializations are available that focus student's technical expertise on biophotonics or biomems. See page 208.

Biomedical Engineering: Premedical shares introductory engineering courses with Biomedical Engineering, but replaces senior engineering laboratories and design courses with biology and organic chemistry courses required by medical schools for admission. The intent of the program is to produce students with a basic engineering background who are qualified to enter medical school. See page 209.

Chemical Engineering applies the knowledge of chemistry, mathematics, physics, biology, and humanities to solve societal problems in areas such as energy, health, the environment, food, textiles, shelter, semiconductors, and homeland security. Employment opportunities exist in various industries such as chemical, petroleum, polymer, pharmaceutical, food, textile, fuel, consumer

products, and semiconductor, as well as in local, state, and federal governments. See page 214.

Civil Engineering addresses the challenges of large-scale engineering projects of importance to society as a whole, such as water distribution, transportation, and building design. Specializations are provided in General Civil Engineering, Environmental Hydrology and Water Resources, Structural Engineering, and Transportation Systems Engineering. Alternatively, students can select a concentration in Computer Applications, Engineering Management, Infrastructure Planning, or Mathematical Methods. See page 222.

Computer Engineering addresses the design and analysis of digital computers, including both software and hardware. Computer design includes topics such as computer architecture, VLSI circuits, data base, software engineering, design automation, system software, and data structures and algorithms. Courses include programming in high-level languages such as Python, Java, C, C++; use of software packages for analysis and design; design of system software such as operating systems and hardware/software interfaces; application of computers in solving engineering problems, and laboratories in both hardware and software experiences. See page 231.

Computer Science and Engineering is designed to provide students with the fundamentals of computer science, both hardware and software, and the application of engineering concepts, techniques, and methods to both computer systems engineering and software system design. The program gives students access to multidisciplinary problems in engineering with a focus on total systems engineering. Students learn the computer science principles that are critical to development of software, hardware, and networking of computer systems. From that background, engineering concepts and methods are added to give students exposure to circuit design, network design, and digital signal processing. Elements of engineering practice include systems view, manufacturing and economic issues, and multidisciplinary engineering applications. The program is administered jointly by the Department of Electrical Engineering and Computer Science in The Henry Samueli School of Engineering and by the Department of Computer Science in the Donald Bren School of Information and Computer Sciences. See page 370.

Electrical Engineering is one of the major contributors to the modernization of our society. Many of the most basic and pervasive products and services are either based on or related to the scientific and engineering principles taught at the Department of Electrical Engineering and Computer Science. Students can specialize in two general areas of studies—Electro-optics and Solid-State Devices, and Systems and Signal Processing—all at the forefront of technological advancement. See page 232.

The major in **Engineering** is a special program of study for upper-division students who wish to combine the study of engineering principles with other areas such as the physical and biological sciences, social and behavioral science, humanities, and arts. Students may construct their own specialization. See page 200.

Environmental Engineering concerns the development of strategies to control and minimize pollutant emissions, to treat waste, and to remediate polluted natural systems. Emphasis areas include air quality and combustion, water quality, and water resources engineering. See page 224.

Materials Science Engineering is concerned with the generation and application of knowledge relating the composition, structure, and synthesis of materials to their properties and applications. During the past two decades, Materials Science Engineering has become an indispensable component of modern engineering education, partly because of the crucial role materials play in national defense, the quality of life, and the economic security and competitiveness of the nation; and partly because the selection of materials has increasingly become an integral part of almost every modern engineering design. Emphasis in the Materials Science Engineering curriculum is placed on the synthesis, characterization, and properties of advanced functional materials; analysis, selection, and design related to the use of materials; the application of computers to materials problems; and the presence of an interdisciplinary theme that allows a qualified student to combine any engineering major with the Materials Science Engineering major. See page 215.

Mechanical Engineering considers the design, control, and motive power of fluid, thermal, and mechanical systems ranging from microelectronics to spacecraft to the human body. Specializations allow students to focus their technical electives in the areas of Aerospace Engineering, Energy Systems and Environmental Engineering, Flow Physics and Propulsion Systems, and Design of Mechanical Systems. See page 242.

The School offers M.S. and Ph.D. degrees in Biomedical Engineering; Chemical and Biochemical Engineering; Civil Engineering; Electrical and Computer Engineering, with concentrations in Computer Graphics and Visualization, Computer Networks and Distributed Computing, Computer Systems and Software, and Electrical Engineering; Engineering, with concentrations in Environmental Engineering, and Materials and Manufacturing Technology; Materials Science and Engineering; and Mechanical and Aerospace Engineering. Specialized research opportunities are available within each of these programs. Bioreaction and bioreactor engineering, recombinant cell technology, and bioseparation processes are research areas in Biochemical Engineering. In Civil Engineering, research opportunities are provided in structural/ earthquake engineering, reliability engineering, transportation systems engineering, environmental engineering, and water resources. Research opportunities in Electrical and Computer Engineering are available in the areas of parallel and distributed computer systems, VLSI design, computer architecture, image and signal processing, communications, control systems, and optical and solid-state devices. Research in combustion and propulsion sciences, laser diagnostics, supersonic flow, direct numerical simulation, computer-aided design, robotics, control theory, parameter identification, material processing, electron microscopy, and ceramic engineering are all available in Mechanical and Aerospace Engineering.

Additional publications describing undergraduate and graduate academic study and research opportunities are available through The Henry Samueli School of Engineering, and the Departments of Biomedical Engineering, Chemical Engineering and Materials Science, Civil and Environmental Engineering, Electrical Engineering and Computer Science, Mechanical and Aerospace Engineering, and the graduate program in Biomedical Engineering.

DEGREES

Aerospace Engineering	B.S.
Biomedical Engineering	B.S., M.S., Ph.D.
Biomedical Engineering: Premedical	B.S.
Chemical and Biochemical Engineering	M.S., Ph.D.
Chemical Engineering	B.S.
Civil Engineering	B.S., M.S., Ph.D.
Computer Engineering	B.S.
Computer Science and Engineering*	B.S.
Electrical and Computer Engineering	M.S., Ph.D.
Electrical Engineering	B.S.
Engineering	B.S., M.S., Ph.D.
Environmental Engineering	B.S.
Materials Science and Engineering	M.S., Ph.D.
Materials Science Engineering	B.S.
Mechanical and Aerospace Engineering	M.S., Ph.D.
Mechanical Engineering	B.S.
Networked Systems*	M.S., Ph.D.

* Offered jointly with the Donald Bren School of Information and Computer Sciences. See the Interdisciplinary Studies section of the *Catalogue* for information.

UNDERGRADUATE STUDY

Student Affairs Office
101 Engineering and Computing Trailer; (949) 824-4334
John LaRue, **Associate Dean**

PLANNING A PROGRAM OF STUDY

Advising

Academic advising is available from academic counselors and peer advisors in the School's Student Affairs Office, 101 Engineering and Computing Trailer, and from faculty advisors. *Students must realize, however, that ultimately they alone are responsible for the planning of their own program and for satisfactory completion of the graduation requirements.* Students are encouraged to consult with the academic counselors in the Engineering Student Affairs Office whenever they desire to change their program of study. All Engineering majors are required to meet with their faculty advisor at least once each year.

Some engineering students will need *more than four years* to obtain their B.S. degree, particularly if part-time employment or extracurricular activities make heavy demands on their time. Normally, such students can stay on track, and are encouraged to do so, by enrolling in summer sessions at UCI or at other institutions when a petition has been approved in advance.

High-achieving students may declare a second major. Early consultation with the School is advisable.

Required courses may be replaced by other courses of equivalent content if the student substantiates the merits of the courses in the program of study and obtains prior approval from faculty in the School.

Students should be aware that most Engineering courses require the completion of prerequisites. The sample programs shown in each departmental description constitute preferred sequences which take into account all prerequisites.

School policy does not permit the addition or deletion of Engineering courses after the second week of the quarter without the Associate Dean's approval.

Undergraduate students who have high academic standing, who have completed the necessary prerequisites, and who have obtained permission from the School may qualify to take certain graduate-level courses.

Students are required to complete UCI's lower-division writing requirement (see the Requirements for a Bachelor's Degree section) during the first two years. Thereafter, proficiency in writing and computing (using a higher-level language such as FORTRAN, Python, C, C++, Java, or with MATLAB) is expected in all Engineering courses.

Students can take the following courses on a Pass/Not Pass basis: (a) courses not used to fulfill the major requirements, and (b) general education courses. Students must take courses to fulfill the UC Entry Level Writing requirement for a grade.

Admissions

The sequential nature of the Engineering program and the fact that many courses are offered only once a year make it beneficial for students to begin their studies in the fall quarter. Applicants wishing to be admitted for the fall quarter, 2011 must have submitted their completed application forms during the priority filing period (November 1–30, 2010).

High school students wishing to enter the UCI Engineering program must have completed four years of mathematics through precalculus or math analysis and are advised to have completed one year each of physics and chemistry. That preparation, along with honors courses and advanced placement courses, is fundamental to success in the Engineering program and is vital to receiving first consideration for admittance to an Engineering major during periods of restricted enrollments. Students applying for admission for fall quarter should complete their examination requirements during May or June of their junior year or during their senior year, but no later than the December test date. (Typically, this means that students will take either the SAT Reasoning Test or the ACT Assessment plus Writing test in October or November, and will take two SAT Subject Tests in November or December.) Applicants must apply for admission to a specific Engineering major or Engineering Undeclared.

If enrollment limitations make it necessary, unaccommodated Engineering applicants may be offered alternative majors at UCI.

Transfer students may be admitted to The Henry Samueli School of Engineering either from another major at UCI or from another college or university. A student seeking admission to The Henry Samueli School of Engineering from colleges and schools other than UCI must satisfy University requirements for admission with advanced standing and should complete appropriate prerequisites for their major of choice. It is to the student's advantage to complete the Intersegmental General Education Transfer Curriculum (IGETC) or UCI general education and lower-division requirements prior to transfer. Since requirements vary from major to major, those contemplating admission with advanced standing to the School should consult each Department's *Catalogue* section and the UCI Office of Admissions and Relations with Schools, (949) 824-6703, for the specific requirements of each program. All transfer students should arrange for early consultation with The Henry Samueli School of Engineering Student Affairs Office at (949) 824-4334.

Change of Major. Students who wish to change their major to one offered by the School should contact the Engineering Student Affairs Office for information about change-of-major requirements, procedures, and policies. Information is also available at http://www.changeofmajor.uci.edu.

Proficiency Examinations

A student may take a course by examination with the approval of the faculty member in charge of the course and the Dean of the School. Normally, ability will be demonstrated by a written or oral examination; if a portion of the capability involves laboratory exercises, the student may be required to perform experiments as well. The proficiency examination is not available for any course a student has completed at UCI.

Concentration: Engineering and Computer Science in the Global Context

The globalization of the marketplace for information technology services and products makes it likely that The Henry Samueli School of Engineering graduates will work in multicultural settings or be employed by companies with extensive international operations, or customer bases. The goal of the concentration is to help students develop and integrate knowledge of the history, language, and culture of a country or geographic region outside the United States, through course work both at UCI and an international host campus, followed by a technology-related internship in the host country.

All of The Henry Samueli School of Engineering majors in good standing may propose an academic plan that demonstrates the ability to complete the concentration (a minimum of eight courses) and other requirements for graduation in a reasonable time frame. It is expected that a student's proposal will reflect a high degree of planning that includes the guidance of academic counselors and those at the UCI Center for International Education regarding course selection, as well as considerations related to internship opportunities, housing, and financial aid. Each student's proposed program of study must be approved by the Associate Dean for Student Affairs in The Henry Samueli School of Engineering. The Associate Dean will be available to assist qualified students with the development of a satisfactory academic plan, as needed.

The concentration consists of the following components:

A. A minimum of eight courses at UCI or at the international campus with an emphasis on the culture, language (if applicable and necessary), history, literature of the country that corresponds to the international portion of the program, international law, international labor policy, global issues, global institutions, global conflict and negotiation, and global economics;

B. A one- or two-semester sequence of technical courses related to the major and, possibly, culture, history, and literature courses taken at an international university;

C. A two-month or longer technical internship experience in the same country as the international educational experience.

More information about the requirements for the concentration is available in The Henry Samueli School of Engineering Student Affairs Office.

The concentration in Engineering and Computer Science in the Global Context is open to students in Aerospace Engineering, Biomedical Engineering, Biomedical Engineering: Premedical, Chemical Engineering, Civil Engineering, Computer Engineering, Engineering (General), Electrical Engineering, Environmental Engineering, Materials Science Engineering, and Mechanical Engineering.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

All students in The Henry Samueli School of Engineering must fulfill the following requirements.

University Requirements: See pages 55–62.

School Requirements

The following are minimum subject-matter requirements for graduation:

Mathematics and Basic Science Courses: Students must complete a minimum of 48 units of college-level mathematics and basic sciences.

Engineering Topics Courses: Students must complete a minimum of 72 units of engineering topics. *Engineering topics* are defined as courses with applied content relevant to the field of engineering.

Design Units: All undergraduate Engineering courses indicate both a total and a design unit value. Design unit values are listed at the end of the course description. Each student is responsible for the inclusion of courses whose design units total that required by the program of study.

The Academic Plan and Advising Requirements to remain affiliated with The Henry Samueli School of Engineering: All students enrolled in The Henry Samueli School of Engineering are required to meet annually with their designated faculty advisor and to have an academic plan on file with the Student Affairs Office which has been approved by their academic counselor. Students who do not have a plan on file, or deviate from this plan without approval from an academic counselor will be subject to probation. Students on probation for two consecutive quarters who do not have a plan on file, or deviate from this plan without approval from an academic counselor will be subject to disqualification. Students who fail to meet with a faculty advisor each year will be subject to disqualification.

Duplication of Subject Material: Students who take courses which involve considerable duplication of subject material may not receive full graduation credit for all units thus completed.

Residence Requirement: In addition to the University residence requirement, at least 36 upper-division engineering units specified by each major must be completed successfully at the University of California.

Variations: Variations from the general School degree requirements may be made subject to the approval of the faculty of the School. Students wishing to obtain variances should submit petitions to the School's Student Affairs Office.

Engineering Gateway Freshman-Year Curriculum

Students who know that they want to major in engineering but who are unsure of the specific major should apply for the Engineering Gateway Curriculum and follow the Sample Engineering Gateway Curriculum. Students following the Engineering Gateway Curriculum are required to meet with an academic advisor every quarter and are strongly encouraged to declare a major as soon as possible and then follow the appropriate sample program of study for that major.

Sample Engineering Gateway Curriculum
Freshman[1]

FALL	WINTER	SPRING
Mathematics 2A	Mathematics 2B	Mathematics 2D
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
ENGR1	Physics 7B/7LB	Physics 7D, 7LD
MAE10, EECS10 or EECS12 or CSE21[2]	or Physics 7C/7LC	General Education
	General Education	

[1] Students who choose to major in Biomedical Engineering or Biomedical Engineering: Premedical should enroll in BME1 in the fall quarter of the sophomore year. Students who choose to major in Computer Engineering should enroll in EECS20 by the spring or summer quarter preceding their sophomore year.

[2] Students who are considering the Computer Science and Engineering major should enroll in CSE21.

Students who choose certain majors during the first year may replace Chemistry courses with required major courses.

Students should choose a major by the end of the spring quarter of their freshman year or earlier. Some modification in the program of study might be appropriate if the student chooses a major before the end of the freshman year. In any case, when the major is chosen, the student must meet immediately with an academic counselor to plan the program of study.

Undergraduate Programs

Specific information about courses fulfilling School and major requirements can be found on the following pages. Note that some majors require more units than the School requirements.

Aerospace Engineering ..... p. 242
Biomedical Engineering ..... p. 208
Biomedical Engineering: Premedical ..... p. 209
Chemical Engineering ..... p. 214
Civil Engineering ..... p. 222
Computer Engineering ..... p. 232
Computer Science and Engineering ..... p. 370
Electrical Engineering ..... p. 233
Engineering ..... p. 201
Environmental Engineering ..... p. 224
Materials Science Engineering ..... p. 215
Mechanical Engineering ..... p. 243

MINORS OF INTEREST TO ENGINEERS

Minor in Earth and Atmospheric Sciences

The minor in Earth and Atmospheric Sciences focuses on the application of physical, chemical, and biological principles to understanding the complex interactions of the atmosphere, ocean, and land through climate and biogeochemical cycles. See the Department of Earth System Science in the School of Physical Sciences section of this *Catalogue* for more information.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

CAREER ADVISING

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information. In addition, special career planning events are held throughout the year including an annual Career Fair. Individual career counseling is available, and students have access to the Career Library which contains information on graduate and professional schools in engineering, as well as general career information.

HONORS

Graduation with Honors. Undergraduate honors at graduation in The Henry Samueli School of Engineering are computed by using 50 percent of the overall UCI GPA and 50 percent of the upper-division Engineering GPA. (Engineering E190 is not used in the calculation of the upper-division GPA.) A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Approximately 1 percent of the graduating class shall be awarded *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude,* with no more than 12 percent being awarded honors. Other important factors are considered (see page 52).

Dean's Honor List. The quarterly Dean's Honor List is composed of students who have received a 3.5 GPA while carrying a minimum of 12 graded units.

Gregory Bogaczyk Memorial Scholarship. This scholarship was established in memory of Gregory Bogaczyk, a former UCI Mechanical Engineering student, and is contributed by the Bogaczyk family and friends. An award is given each year to a junior or senior Mechanical Engineering student.

Haggai Memorial Endowed Scholarship. This memorial fund was established in honor of Ted Haggai, an electrical engineer. This scholarship is awarded to an outstanding senior electrical engineering student and member of Tau Beta Pi. Primary consideration will be given to members of Tau Beta Pi who have contributed outstanding service to both UCI and The Henry Samueli School of Engineering.

Christine Jones Memorial Scholarship. This scholarship was established in memory of Christine Jones, an Electrical Engineering graduate, Class of 1989. The primary focus of this scholarship is to provide financial support to a female undergraduate student in The Henry Samueli School of Engineering.

Deborah and Peter Pardoen Memorial Scholarship. This scholarship is awarded each year to a graduating senior in Mechanical Engineering or in Aerospace Engineering. The scholarship is based on outstanding service to The Henry Samueli School of Engineering and the community.

Henry Samueli Endowed Scholarship. This premier scholarship, established by Henry Samueli, is awarded to outstanding freshmen and transfer students in The Henry Samueli School of Engineering. Recipients are chosen by the School based on their academic excellence. The award is renewable up to four years for freshmen and up to two years for transfer students.

Additional awards in other categories are made throughout the academic year.

CENTER FOR OPPORTUNITIES AND DIVERSITY IN ENGINEERING

101 Engineering and Computing Trailer; (949) 824-4334
Robin Jeffers, **Director**

The Center for Opportunities and Diversity in Engineering (CODE) houses a comprehensive recruitment, retention, and placement program in The Henry Samueli School of Engineering which attempts to provide academic support and professional development to students from backgrounds which have traditionally had limited access to the engineering profession. Services provided include advisement, tutoring, study rooms, notification of research opportunities, fellowships, guest speakers, and employment opportunities. At the core of its activity is the focus on community building, and students are encouraged to bond around their common interests and goals.

SPECIAL PROGRAMS AND COURSES

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

Engineering 199

Every undergraduate student in The Henry Samueli School of Engineering has the opportunity to pursue independent research under the direct supervision of a professor in the School. Interested students should consult with a faculty member to discuss the proposed research project. If the project is agreed upon, the student must fill out a 199 Proposal Form and submit it to the Engineering Student Affairs Office.

Undergraduate Research Opportunities Program

The Undergraduate Research Opportunities Program (UROP) encourages and facilitates research and creative activities by undergraduates. Research opportunities are available not only from every discipline, interdisciplinary program, and school, but also from many outside agencies, including national laboratories, industrial partners, and other universities. UROP offers assistance to students and faculty through all phases of the research activity: proposal writing, developing research plans, resource support, conducting the research and analyzing data, and presenting results of the research at the annual spring UCI Undergraduate Research Symposium. Calls for proposals are issued in the fall and spring quarters. Projects supported by UROP may be done at any time during the academic year and/or summer, and the research performed must meet established academic standards and emphasize interaction between the student and the faculty supervisor. In addition, all students participating in faculty-guided research activities are welcome to submit their research papers for faculty review and possible publication in the annual *UCI Undergraduate Research Journal.* For more information, contact the UROP Office, 1100 Student Services II; (949) 824-4189; urop@uci.edu; http://www.urop.uci.edu/.

Accelerated M.S. or Ph.D. Status Program in The Henry Samueli School of Engineering

Exceptionally promising UCI undergraduate Engineering students may, during their junior or senior year, petition for streamlined admissions into the M.S. or Ph.D. programs within The Henry Samueli School of Engineering. Accelerated M.S. Status would allow a student to petition for exemption from UCI's Graduate Record Examination (GRE) requirement for graduate school admission. (The exemption applies only to current UCI students applying for admission to one of the M.S. programs in The Henry Samueli School of Engineering; other graduate schools may still require the GRE.) A current UCI undergraduate student whose ultimate goal is a Ph.D. may apply for the Accelerated Status Ph.D. program, however, a GRE score must be submitted.

Accelerated Status applicants would in all other ways be evaluated in the same manner as other applicants to the School's graduate programs. Occasionally, a candidate for Accelerated Status may be required by the faculty to submit GRE scores in support of the graduate application.

Students who successfully petition for Accelerated Status, upon completion of the undergraduate degree program, may petition to credit toward the M.S. degree up to 18 units (with a grade of B or better) of graduate-level course work completed in excess of requirements for the UCI bachelor's degree.

Please see http://www.eng.uci.edu/grad/services/accelerated for more detailed information about this program and its eligibility requirements.

Education Abroad Program

Upper-division and graduate Engineering students may participate in a number of programs which offer unique opportunities for education and training abroad. The University's Education Abroad Program (EAP) offers engineering course work for UCI academic credit at a number of universities. Some of the EAP-affiliated engineering schools require proficiency in the host country's language, while others are English speaking. Study abroad may postpone the student's graduation for one or two quarters, depending primarily on the student's language preparation (which can begin in the freshman year), but the added experience can add to the student's maturity and professional competence. EAP students pay regular UCI fees and keep any scholarships they may have. Additional information is available in the Education Abroad Program section.

STUDENT PARTICIPATION AND ORGANIZATIONS

Faculty and committee meetings (except those involving personnel considerations) are open meetings; in addition to designated student representatives, all students are encouraged and expected to participate in the development of School policy. Student evaluation of the quality of instruction for each course is requested each quarter.

Engineering students may join any of a number of student organizations. Most of these organizations are professionally oriented and in many instances are local chapters of national engineering societies. A primary function of these groups is to provide regular technical and social meetings for students with common interests. Most of the groups also participate in the annual Engineering Week activities and in other School functions.

Associated General Contractors (AGC). A student chapter of the national organization, ACG at UCI is an academic engineering club for students interested in the construction field.

American Indian Science & Engineering Society (AISES). The mission of AISES is to increase the representation of American Indians in engineering, science, and technology. Chapters emphasize education as a tool that will facilitate personal and professional growth opportunities through mentor programs, leadership training, scholarships, conferences, and summer job opportunities.

American Institute of Aeronautics and Astronautics (AIAA). The AIAA is a technical society of 40,000 professional and student members devoted to science and engineering in the field of aerospace. The local chapter's primary activities include seminars, tours of industries, and mentoring for students by professional members.

American Institute of Chemical Engineers (AIChE). AIChE, a student chapter of the national organization, provides Chemical Engineering majors with the opportunity to interact with faculty and professionals in the field.

American Society for Civil Engineers (ASCE). One of the larger engineering clubs, ASCE at UCI is a student chapter of the national organization. The ASCE focuses its efforts on interactions with professional engineers, sponsorship of Engineering Week activities, and participation in the annual ASCE Southwest Conference.

American Society for Materials (ASM). The student chapter of ASM at UCI provides the opportunity for Materials Science Engineering (MSE) students to meet engineers and scientists from local industry, attend seminars organized by the Orange Coast Chapter of ASM International, and organize discussion sessions that focus on progress and advances in the MSE field and that promote interactions between MSE students and materials faculty.

American Society of Mechanical Engineers (ASME). The student chapter of ASME at UCI provides the opportunity for Mechanical Engineering majors to meet with professors, organize social events, and participate in events and competitions supported by the ASME national organization.

Biomedical Engineering Society. The student chapter of BMES at UCI is an academic club for students in the field of Biomedical Engineering.

Chi Epsilon. This organization is a national engineering honor society which is dedicated to the purpose of promoting and maintaining the status of civil engineering as an ideal profession. Chi Epsilon was organized to recognize the characteristics of the individual that are fundamental to the successful pursuit of an engineering career.

Electric Vehicle Association/UCI (EVA/UCI). EVA/UCI gives students an opportunity for hands-on work on electric car conversions coupled with design experience.

Engineering Student Council (ESC). The ESC is the umbrella organization that provides a voice for all Engineering student chapters. A significant activity of the Council is organizing UCI's annual Engineering Week celebration.

Engineers Without Borders (EWB). This humanitarian organization combines travel with the idea that engineers can play an instrumental role in addressing the world's assorted challenges. Through the implementation of equitable, economical, and sustainable engineering projects, EWB-UCI works to improve quality of life within developing communities abroad.

Eta Kappa Nu. A student chapter of the National Electrical Engineering Honor Society, Eta Kappa Nu's purpose is to promote creative interaction between electrical engineers and give them the opportunity to express themselves uniquely and innovatively to project the profession in the best possible manner.

Filipinos Unifying Student-Engineers in an Organized Network (FUSION). FUSION is the merging of diverse, distinct, or separate elements into a unified whole. The mission of FUSION is to promote the academic and professional development of student engineers by providing an organized network of support.

Institute of Electrical and Electronic Engineers (IEEE). A student chapter of a multinational organization, IEEE at UCI encompasses academic, professional, and social activities.

Institute of Transportation Engineers (ITE). ITE is a student chapter of a national group of transportation engineering professionals. Offering opportunities to meet both professionals and other students, ITE focuses its activities on an annual project with practical applications.

Mexican-American Engineers and Scientists (MAES). Open to all students, MAES is a student and professional organization with the purpose of aiding students in their academic, professional, and social endeavors.

National Society of Black Engineers (NSBE). The NSBE, with almost 6,000 members, is one of the largest student-managed organizations in the country. The Society is dedicated to the realization of a better tomorrow through the development of intensive programs to increase the recruitment, retention, and successful graduation of underrepresented students in engineering and other technical majors.

Omega Chi Epsilon. The student chapter of the National Chemical Engineering Honor Society aims to recognize and promote high scholarship, original investigation, and professional service in chemical engineering.

Phi Sigma Rho. This national sorority is open to women who are in engineering and engineering technology majors. Its purpose is to provide social opportunities, promote academic excellence, and provide encouragement and friendship.

Pi Tau Sigma. The mechanical engineering honor society, Pi Tau Sigma, is committed to recognizing those of high achievement. The goal of the organization is to promote excellence in academic, professional, and social activities.

Sigma Gamma Tau. The aerospace engineering honor society, Sigma Gamma Tau, is committed to recognizing those of high achievement. The goal of the organization is to promote excellence in academic, professional, and social activities.

Society of Hispanic Professional Engineers (SHPE). SHPE is both a student and professional organization. The UCI SHPE chapter works to recruit, retain, and graduate Latino engineers by providing a comprehensive program which includes high school visitations, coordinated study sessions, and industry speakers and tours. At the professional level there are opportunities for career positions and scholarships for members who are enrolled in undergraduate and graduate engineering and computer science programs.

Society of Automotive Engineers (SAE). Members of the SAE chapter at UCI participate in technical expositions, mini-Baja buggy races, student competitions, and social activities.

Society of Women Engineers (SWE). SWE is a national service organization dedicated to the advancement of women in engineering. UCI's student chapter encourages academic and social support, and membership is open to both men and women in technical majors interested in promoting camaraderie and in helping to make engineering study a positive experience.

Structural Engineers Association of Southern California (SEAOSC). The UCI student chapter of SEAOSC introduces students to the field of structural engineering through tours, speakers, and SEAOSC dinners with professional members of the organization.

Sustainable Energy Technology Club (SETC). With the common theme of energy, club members explore how science and technology can be used as a driving force behind making changes in society with respect to a cleaner environment and less wasteful lifestyles.

Tau Beta Pi. The national Engineering honor society, Tau Beta Pi acknowledges academic excellence in the wide variety of engineering disciplines. Tau Beta Pi at UCI sponsors community service activities, social events, and technical and nontechnical seminars.

Triangle. The national social fraternity is open to engineers, architects, and scientists.

SCHOOLWIDE PROGRAM

Faculty in the Departments of Biomedical Engineering, Chemical Engineering and Materials Science, Civil and Environmental Engineering, Electrical Engineering and Computer Science, and Mechanical and Aerospace Engineering also teach courses in the major in Engineering program.

Descriptions and requirements for the undergraduate majors in Aerospace Engineering (AE), Biomedical Engineering (BME), Biomedical Engineering: Premedical (BMEP), Chemical Engineering (ChE), Civil Engineering (CE), Computer Engineering (CpE), Computer Science and Engineering (CSE), Electrical Engineering (EE), Engineering (a general program, GE), Environmental Engineering (EnE), Materials Science Engineering (MSE), and Mechanical Engineering (ME) may be found in subsequent sections.

General Undergraduate Major in Engineering

101 Engineering and Computing Trailer; (949) 824-4334

The Henry Samueli School of Engineering offers a general undergraduate major in Engineering to upper-division students who wish to pursue broad multidisciplinary programs of study or who wish to focus on a special area not offered in the four departments. Examples of other areas that may be of interest are biochemical engineering, electromechanical engineering, project management, or hydrology. The program of study in any area, aside from the established specializations, is determined in consultation with a faculty advisor.

ADMISSIONS

The general major in Engineering is only open to junior-standing students who have completed the required lower-division courses with a high level of achievement. Freshmen are not eligible to apply for this major. The sequential nature of the Engineering program and the fact that many courses are offered only once a year make it beneficial for students to begin their studies in the fall quarter.

Transfer students. The general Engineering major is a specialized program for students who are seeking careers in areas other than traditional engineering disciplines and is open to upper-division students only. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (with laboratory), one course in computational methods (FORTRAN, C, C++), and one year of chemistry.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN ENGINEERING

Credit for at least 180 units, and no more than 196 units. All courses must be approved by a faculty advisor and the Associate Dean of Student Affairs prior to enrollment in the program.

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B-D, 2J, and 3D. Physics 7B/7LB or Physics 7C/7LC. With the approval of a faculty advisor and the Associate Dean, students select all additional Mathematics and Basic Science courses.

Engineering Topics Courses: Engineering EECS10. With the approval of a faculty advisor and the Associate Dean, students select all additional Engineering Topics courses.

Design unit values are indicated at the end of each course description. The faculty advisors and the Student Affairs Office can provide necessary guidance for satisfying the design requirements.

PROGRAM OF STUDY

Students should keep in mind that the program for the major in Engineering is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students must have their programs approved by an academic counselor in Engineering. A sample program of study is available in the Student Affairs Office.

Courses in Engineering

***(Schedule of Classes* designation: Engr)**

LOWER-DIVISION

NOTE: With the exception of ENGR54, the courses listed below are open only to students in The Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

ENGR1 Freshman Seminar in Engineering (1). An introduction to the engineering profession. Weekly seminars by both faculty and representatives from industry present an overview of each engineering discipline. Students learn about current trends and issues in engineering, and career and academic options. (Design units: 0)

ENGR2 Energy Sources, Energy Uses (4). Technical aspects of energy extraction, transport, use, and environmental effects. Devices for energy conversion. (Design units: 0) *Not offered every year.*

ENGR10 Computational Methods in Engineering (4). Procedures and procedure followers, algorithms and flow charts, computer languages, subprograms. Computer macro- and microelements, number systems. Methods of differentiation, integration, curve fitting, list processing. Error analysis. Must qualify in BASIC and FORTRAN at end of course through computer use. Corequisite or prerequisite: Mathematics 2A. Only one course from ENGR10, MAE10, EECS10, and EECS12 may be taken for credit. (Design units: 0). *Not offered every year.*

ENGR15 Problem Solving in Engineering (4). Introduction to scientific computing to solve engineering problems. Problem identification, algorithmic design, and solution using appropriate computational tools. Design and application documentation. Corequisite: Mathematics 3D. Prerequisites: EECS10, MAE10, EECS12, or ICS 21; Mathematics 2J. ENGR15 and CEE20 may not both be taken for credit. (Design units: 1)

ENGR20 Energy and Society (4). The social, economic, and political aspects of how we obtain energy, get it to where we need it, use it, dispose of the wastes, and pay for these activities. Examination of alternatives. (Design units: 0) *Not offered every year.*

ENGR30 Statics (4) F, Summer. Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 7A. Same as CEE30 and MAE30. (Design units: 0)

ENGR54 Principles of Materials Science and Engineering (4) W, Summer. *Materials—topics range from superconductors to biodegradable polymers.* Structure and properties of materials, including metal, ceramics, polymers, semiconductors, composites, traditional materials. Atomic structure, bonding, defects, phase equilibria, mechanical properties, electrical, optical, and magnetic properties. Brief introduction to materials processing and synthesis. Prerequisites: Chemistry 1A and Physics 7B. (Design units: 0)

ENGR69 Energy Facilities Inspection (0). Inspection of power-generating stations of various types, oil and gas processing facilities, and end-use facilities. One unit of workload credit. Prerequisites: ENGR2, consent of instructor. May be repeated for credit as topics vary. (Design units: 0) *Not offered every year.*

ENGR80 Dynamics (4) W, Summer. Introduction to the kinetics and dynamics of particles and rigid bodies. The Newton-Euler, Work/Energy, and Impulse/Momentum methods are explored for ascertaining the dynamics of particles and rigid bodies. An engineering design problem using these fundamental principles is also undertaken. Prerequisites: Mathematics 2D and Physics 7C. Same as CEE80 and MAE80. (Design units: 0.5)

ENGR92 Engineering and Computer Educational Laboratory (0) F. Comprehensive academic support designed primarily for underrepresented or underprepared students in Engineering, ICS, or selected areas of the physical sciences. Typical program activities: tutoring, study skills, career planning, self-esteem enhancement, library research techniques. Pass/Not Pass only. Students may receive a maximum of 12 units of workload credit only. (Design units: 0)

ENGR93 Public and Professional Service in Engineering (0). Student participation in public and professional service activities related to engineering. One to four units of workload credit only.

ENGR98 Group Study (1 to 4). Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

UPPER-DIVISION

ENGR150 Mechanics of Structures (4) F, S, Summer. Stresses and strains. Torsion. Bending. Beam deflection. Shear force and moment distributions in beams. Yielding and buckling of columns. Combined loading. Transformation of stresses and strain. Yielding criteria. Finite elements analysis of frames. Dynamics of a two-bar truss. Prerequisites: Engineering MAE30 or ENGR30; Mathematics 2J. Same as MAE150. Only one course from ENGR150/MAE150, ENGRH150, CEE150, and CEEH150 may be taken for credit. (Design units: 2)

ENGRH150 Mechanics of Structures (4) F, S, Summer. Covers the same material as ENGR150 but in greater depth. Prerequisites: MAE30, Mathematics 2J. Only one course from ENGRH150, ENGR150/MAE150, CEE150, and CEEH150 may be taken for credit. (Design units: 2)

ENGR169 Energy Systems Field Trip (3). A ten-day to two-week inspection trip to energy extraction facilities, large-scale energy users, research laboratories, and design offices. Prerequisites: ENGR2 and ENGR20 or consent of instructor. (Design units: 0)

ENGR190 Communications in the Professional World (4) F, W, S, Summer. Workshop in technical and scientific writing. Oral presentation with video monitoring. Communication with various publics. Real-world professionalism. Students must be of junior or senior standing in Engineering and have completed the lower-division writing requirement. (Design units: 0)

ENGR195 Special Topics in Engineering (1 to 4). Prerequisites vary. May be repeated for credit as topics vary.

ENGR196 Engineering Thesis (4) F, W, S. Preparation of final presentation and paper describing individual research in Engineering completed in one or more quarters of individual study (i.e., ENGR199). Prerequisites: completion of lower-division writing requirement, consent of ENGR199 instructor, and completion of at least four units of Individual Research in Engineering. (Design units: varies)

ENGRH196 Honors Thesis (4) F, W, S. Preparation of final presentation and paper describing individual research in Engineering. For participants in the Campuswide Honors Program. Prerequisites: ENGRH199 and consent of instructor. (Design units: varies)

ENGR197A Educational Strategies for Tutoring and Teacher Aiding (4). Placement in a public elementary or secondary school to gain experience as a tutor or teacher aide. Emphasis on cognitive learning and the development of instructional strategies and resources which can be used in effective cross-age and cross-cultural experiences. Pass/Not Pass only. May be taken for credit three times. Same as Education 100. (Design units: 0) **(IX)**

ENGR199 Individual Study (1 to 4) F, W, S. Supervised independent reading, research, or design for undergraduate Engineering majors. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

ENGRH199 Individual Study for Honors Students (1 to 5) F, W, S. Supervised research in Engineering for participants in the Campuswide Honors Program. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisites: consent of instructor; open only to members of Campuswide Honors Program. May be repeated for credit. (Design units: varies)

GRADUATE STUDY

Graduate Student Affairs Office
101 Engineering and Computing Trailer; (949) 824-4334
John LaRue, **Associate Dean**

ADMISSIONS

For information on requirements for admission to graduate study at UCI, contact the appropriate Engineering department, concentration director, or the Graduate Student Affairs Office in The Henry Samueli School of Engineering. Additional information is available in the *Catalogue's* Graduate Division section. Admission to graduate standing in The Henry Samueli School of Engineering is generally accorded to those possessing a B.S. degree in engineering or an allied field obtained with an acceptable level of scholarship from an institution of recognized standing. Those seeking admission without the prerequisite scholarship record may, in some cases, undertake remedial work; if completed at the stipulated academic level, they will be considered for admission. Those admitted from an allied field may be required to take supplementary upper-division courses in basic engineering subjects. The Graduate Record Examination (GRE) General Test is required of all applicants.

FINANCIAL SUPPORT

Teaching assistantships and fellowships are available to qualified applicants. (Applicants should contact the Department or concentration director to which they are applying for information.) Research assistantships are available through individual faculty members. Although not required, it is beneficial for applicants to contact the faculty member directly to establish the potential for research support. Early applications have a stronger chance for financial support.

PART-TIME STUDY

Those students who are employed may pursue the M.S. degree on a part-time basis, carrying fewer units per quarter. Since University residency requirements necessitate the successful completion of a minimum number of units in graduate or upper-division work in each of at least three regular University quarters, part-time students should seek the advice of a counselor in The Henry Samueli School of Engineering Graduate Student Affairs Office and the approval of the Graduate Advisor in their program. M.S. programs must be completed in four calendar years from the date of admission. Students taking courses in University Extension prior to enrollment in a graduate program should consult the following section on Transfer of Courses.

TRANSFER AND SUBSTITUTION OF COURSES

Upon petition, a limited number of *upper-division undergraduate or graduate-level courses* taken through University Extension, at another UC campus, or in another accredited university may be credited toward the M.S. degree after admission. The applicability of transfer or substitution courses must be approved by the student's department, the School's Associate Dean, and the Graduate Dean of the University, in accordance with Academic Senate regulations. Also in accordance with UC Academic Senate policy, transfer credit for the M.S. degree cannot be used to reduce the minimum requirement in strictly graduate (200 series) courses.

Graduate Programs

Specific information about program requirements can be found on the following pages.

Biomedical Engineering ..... p. 210
Chemical and Biochemical Engineering ..... p. 216
Civil Engineering ..... p. 225
Electrical and Computer Engineering ..... p. 233
Concentration in Computer Graphics and Visualization .... p. 234
Concentration in Computer Networks and Distributed Computing ..... p. 234
Concentration in Computer Systems and Software ..... p. 234
Concentration in Electrical Engineering ..... p. 233
Engineering ..... p. 202
Concentration in Environmental Engineering ..... p. 203
Concentration in Materials and Manufacturing Technology .. p. 205
Materials Science and Engineering ..... p. 217
Mechanical and Aerospace Engineering ..... p. 243

The M.S. and Ph.D. degree program in Networked Systems is supervised by an interdepartmental faculty group. Information is available in the Interdisciplinary Studies section of the *Catalogue.*

Graduate Concentration in Environmental Engineering

101 Engineering and Computing Trailer; (949) 824-4334
William J. Cooper, **Director and Graduate Advisor**

Faculty

Rafael L. Bras: Hydrology, eco-hydrology, hydroclimatology, hydrometeorology, land-atmosphere interactions, fluvial geomorphology, land surface evolution, remote sensing

William J. Cooper: Environmental chemistry, advanced oxidation processes for water treatment, aquatic photochemistry of carbon cycling

Donald Dabdub: Mathematical modeling of urban and global air pollution, dynamics of atmospheric aerosols, secondary organic aerosols, impact of energy generation on air quality, chemical reactions at gas-liquid interfaces

Nancy A. Da Silva: Bioremediation, genetic engineering

Russell L. Detwiler: Groundwater hydrology, contaminant fate and transport, subsurface process modeling, groundwater/surface-water interaction

Derek Dunn-Rankin: Combustion, optical particle sizing, particle aerodynamics, laser diagnostics and spectroscopy

James S. Famiglietti: Modeling and remote sensing of global hydrology; global change and water availability; sea level rise

Stanley B. Grant: Environmental engineering, inland and coastal water quality, coagulation and filtration of colloidal contaminants, environmental microbiology

C. Sunny Jiang: Water pollution microbiology, environmental biotechnology, aquatic microbial ecology

Michael Kleinman *(Adjunct)*: Uptake and distribution of inhaled toxic materials in the respiratory tract; effects of air pollutants on cardiopulmonary function

Mikael Nilsson: Advanced nuclear fuel cycles, actinide chemistry, liquid-liquid extraction, process development, radiolysis, detection and detectors for online process control

Betty H. Olson: Molecular applications for optimizing biological processes in wastewater treatment, environmental health, drinking water microbiology

Diego Rosso: Environmental process engineering, mass transfer, wastewater treatment, carbon- and energy-footprint analysis

G. Scott Samuelsen: Energy, fuel cells, hydrogen economy, propulsion, combustion and environmental conflict; turbulent transport in complex flows, spray physics, NOx and soot formation, laser diagnostics and experimental methods; application of engineering science to practical propulsion and stationary systems; environmental ethics

Brett F. Sanders: Environmental and computational fluid dynamics, water resources engineering

Jean-Daniel M. Saphores: Transportation economics, planning and policy, environmental and natural resource economics and policy, quantitative methods

Soroosh Sorooshian: Hydrology, hydrometeorology and hydroclimate modeling, remote sensing, water sources management

Jasper A. Vrugt: Surface hydrology and soil physics

Jun Wu: Cancer epidemiology; focus on gastrointestinal cancers (colon, rectum, and pancreas)

Environmental Engineering addresses the development of strategies to control anthropogenic emissions of pollutants to the atmosphere, waterways, and terrestrial environment; the remediation of polluted natural systems; the design of technologies to treat waste; fire safety; noise suppression; energy efficiency; and the evaluation of contaminant fate in urban environments. Environmental engineering issues are now an important component in the development of many engineering technologies and consequently are an important aspect of an engineering education. The discipline itself is interdisciplinary and requires a curriculum that provides students with an understanding of fundamentals in air- and water-quality sciences, contaminant fate and transport, and design concepts for pollutant emission control and treatment. To avoid the development of environmental engineering solutions which only transform one form of pollution to another, modern engineering education programs must require exposure and familiarity with a greater number of subjects than ever before.

Environmental engineers with an interdisciplinary background are particularly sought to address the complex infrastructure needs of today's society, where they must be able to communicate with teams of scientists and engineers from different disciplines. Environmental engineering graduates who meet this description can expect to remain in strong demand in the private and public employment sectors, and their range of career opportunities is highly diverse. Examples of career fields and activities include the development of new technologies to genetically engineer microorganisms for waste treatment, design of combustion and control processes that minimize pollutant emissions and maximize energy efficiency, resolution of complex pollutant transport processes in naturally heterogeneous systems, development of new physical-chemical treatment approaches, and characterization of pollutant transformation mechanisms in natural systems.

Curricular and research subjects of interest in Environmental Engineering include environmental air and water chemistry, environmental microbiology, combustion technologies, aerosol science, transport phenomena, reactor theory, unit operations and systems design, mathematical modeling, energy systems, soil physics, fluid mechanics, hydrology, and meteorology. Interdisciplinary research endeavors commonly bridge many of these different subjects and a current focus is maintained on new and emerging technologies. Curriculum objectives have also been set to maintain a balance between the depth and breadth of program scope for each student.

Students may pursue either the M.S. or Ph.D. degree in Engineering with a concentration in Environmental Engineering.

Required Background

The interdisciplinary nature of the program allows students with a variety of backgrounds to undertake studies in this field. Students with a background in engineering—particularly chemical, civil, environmental, and mechanical engineering—as well as scientists from biology, chemistry, environmental science, and physics, are encouraged to participate.

Students admitted to the program are expected to have had rigorous undergraduate exposure to a number of relevant subject areas including air quality, environmental chemistry, fluid mechanics, microbial processes, and reactor theory and design. The degree to which each student meets the program's background requirement is determined by participating faculty at the time of admission. Students with an insufficient background who are offered admission will be required to take a set of appropriate prerequisite courses. Prerequisite work typically involves at least two and frequently as many as five or six upper-division, undergraduate courses each of which must be completed with a final grade of B or better. Occasionally, lower-division work in chemistry, mathematics, or physics is required. The student's specific prerequisite course work requirement, if any, is stated the letter of admission.

The background requirement establishes a common foundation for graduate study in the program. Not all students are required to take prerequisite course work; those who are may do so following matriculation in the graduate program. In addition, M.S. students may use a limited amount of upper-division undergraduate course work taken to meet the background requirement in partial fulfillment of graduate degree requirements.

Although this list is not exhaustive, commonly required prerequisite courses within each of the required background areas are as follows:

Air Quality: Engineering MAE110, MAE162, or MAE164.
Environmental Chemistry: CEE162 or Earth System Science 102.
Environmental Microbiology: CBEMS112 or CBEMS116/216.
Fluid Mechanics: CEE170, CBEMS120A, or MAE130A.
Reactor Theory and Design: CBEMS110.

Core Requirement

Students must complete an advanced mathematics course, either CBEMS230 (Applied Engineering Mathematics I), CEE283 (Mathematical Methods in Engineering Analysis), or MAE200B (Engineering Analysis II).

Areas of Emphasis

Each student selects a primary area of emphasis within Environmental Engineering: Water Quality, Water Resources, or Air Quality and Combustion. To achieve the interdisciplinary objectives of the program, students are required to take at least two electives outside their primary area, one each in two different areas. These outside electives may also be taken from approved courses in other academic units, including the Schools of Social Ecology, Physical Sciences, and Medicine. Electives within each of the emphasis areas in Engineering are listed below.

Water Quality: CBEMS210 (Reaction Engineering), CBEMS214 (Bioremediation), CBEMS216 (Field Practicum), CBEMS218 (Bioengineering with Recombinant Organisms), CBEMS220 (Transport Phenomena), CBEMS234 (Bioreactor Engineering), CEE263 (Advanced Biological Treatment Processes), CEE265 (Advanced Physical-Chemical Treatment Processes), Earth System Science 262 (Global Biogeochemical Cycles).

Water Resources: CEE271 (Flow in Unsaturated Media), CEE272 (Groundwater Hydrology), CEE275 (Topics in Coastal Engineer-

ing), CEE276 (Hydrology), CEE277 (Hydrologic Transport Fundamentals), CEE278 (Fluid Mechanics of Open Channels), CEE279 (Hydrologic Computational Modeling), Earth System Science 203 (Earth System Change).

Air Quality and Combustion: MAE210 (Advanced Fundamentals of Combustion), MAE215 (Advanced Combustion Technology), MAE230A (Advanced Incompressible Fluid Dynamics I), MAE231 (Fundamentals of Turbulence), MAE232 (Atmospheric Turbulence), MAE233 (Turbulent Free Shear Flows), MAE260 (Issues Related to Atmospheric Processes), MAE261 (Air Pollution Modeling), MAE264 (Combustion Particulates and Aerosols), Earth System Science 220 (Earth System Climatology).

MASTER OF SCIENCE DEGREE

Two options are available for M.S. degree students: a thesis option and a comprehensive examination option. Both options require the completion of at least 36 units of study. Study plans for both options must also include two graduate courses from outside the student's primary area of emphasis.

Plan I. Thesis Option

A thesis option is available to students who prefer to conduct a focused research project. Students selecting this option must complete an original research investigation and a thesis, and obtain approval of the thesis by a thesis committee. Of the 36 required units, at least 20 must be graduate courses (numbered 200–289), including either CBEMS230, MAE200B, or CEE283. A maximum of eight M.S. research units and up to eight units of upper-division undergraduate elective courses may be applied to the degree with the prior approval of the Graduate Advisor.

Plan II. Comprehensive Examination Option

Alternatively, students may select a comprehensive examination option in which they must successfully complete 36 units of study and pass a comprehensive examination. At least 24 units must be graduate courses (numbered 200–289), including either CBEMS230, MAE200B, or CEE283. Up to 12 units may be taken as upper-division undergraduate elective courses.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. concentration in Environmental Engineering requires the achievement of original and significant research that advances the discipline. Doctoral students are selected on the basis of an outstanding record of scholarship and potential for research excellence.

The doctoral study program is tailored to the individual student in consultation with a faculty advisory committee. Students entering with a master's degree may be required to take additional course work, to be decided in consultation with the graduate advisor and the program director. Students without a master's degree may be admitted into the Ph.D. program. However, these students will be required to complete the degree requirements above for the master's degree prior to working on doctoral studies. Within this flexible framework, the School maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Environmental Engineering program guidelines for details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty, passage within the first year of a preliminary examination, formal advancement to candidacy by passing a qualifying examination in the third year (or second year for students who entered with a master's degree); completion of a significant research investigation, and the submission and oral defense of an acceptable dissertation.

Committees for preliminary and Ph.D. qualifying examinations and the doctoral committee must have at least one Environmental Engineering faculty member from outside the student's area of emphasis. The student's dissertation topic must be approved by the student's doctoral committee. The degree is granted upon the recommendation of the doctoral committee and the Dean of Graduate Division. The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years.

M.S. and Ph.D. in Engineering with a Concentration in Materials and Manufacturing Technology

101 Engineering and Computing Trailer; (949) 824-4334
Chin C. Lee, **Director and Graduate Advisor**

Faculty

Mark Bachman: Integrated microsystems, microfabrication technology, biomedical microdevices, sensor systems, human sensing, human-machine interface

Ozdal Boyraz: Silicon photonics, nonlinear optics in silicon, cascaded cavity silicon Raman lasers

Peter J. Burke: Nano-electronics, bio-nanotechnology

Zhongping Chen: Optical sensor and imaging, MEMS and biophotonic system, and biomedical devices

James C. Earthman: Fatigue behavior and cyclic damage, automated materials testing and diagnostics, high-temperature fracture, biomaterials, green materials

Franco De Flaviis: Microwave materials and devices, MEMS devices and fabrication processes

John C. LaRue: Fluid mechanics, micro-electrical-mechanical systems (MEMS), turbulence, heat transfer, instrumentation

Abraham Lee: Micro and nanofluidic chips, droplet-based reactors for bioassays and materials synthesis, cell and biomolecular based sensors, nanoparticles and vesicles for drug delivery and targeted therapeutics

Chin C. Lee: Bonding technology, electronic packaging, acoustics, microwaves, semiconductor devices, thermal management

Henry P. Lee: Optoelectronic materials, growth, and devices

Guann-Pyng Li: High-speed semiconductor technology, optoelectronic devices, integrated circuit fabrication and testing

Marc J. Madou: Fundamental aspects of micro/nano-electro-mechanical systems (MEMS/NEMS), biosensors, nanofluidics, biomimetics

Martha L. Mecartney: Grain boundary engineering of ceramics, superplastic ceramics, solid oxide fuel cell materials, ceramics for nuclear waste storage

Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between property and microstructure

Daniel R. Mumm: Enabling materials for energy systems and propulsion (solid oxide fuel cells, thermal barrier coatings), interface mechanics, materials behavior at high temperature, lightweight/multi-functional structures, nanostructured materials, electron microscopy and microanalysis

Richard Nelson *(Adjunct)*: Applications: MEMS, nanosystems; materials: structural, mechanical, electrical, and optical properties of materials for the construction of new devices and integrated systems

Regina Ragan: Self-assembly of hybrid organic/inorganic nanostructures for nanoelectronic and sensing applications; correlating electron transport and optical properties with atomic and molecular structure

Andrew A. Shapiro *(Adjunct)*: Electronic properties of materials; electronic packaging materials, processes, and characterization

Andrei M. Shkel: Design and advanced control of micro-electro-mechanical systems (MEMS); precision micro-sensors and actuators for telecommunication and information technologies; MEMS-based health monitoring systems, disposable diagnostics devices, prosthetic implants

Frank G. Shi: Materials, packaging/manufacturing technologies for optoelectronic devices (LEDs, solar cells, sensors, etc.); polymer nanocomposites; die attach adhesives and electrical/thermal conductive pastes; silicone and epoxy encapsulants; luminescent and phosphor materials; optical glass

Lizhi Sun: Micro- and nano-mechanics, composites and nanocomposites, smart materials and structures, multiscale modeling, elastography

Chen S. Tsai: Integrated and fiber optics, devices, and materials, integrated acoustooptics and magnetooptics, integrated microwave magnetics, Ultrasonic Atomization for Nanoparticles Synthesis, silicon photonics

Lorenzo Valdevit: Multifunctional sandwich structures, thermal protection systems, morphing structures, active materials, MEMS, electronic packaging, cell mechanics

Albert Yee: Nanofabrication of soft materials, physics of polymer thin films, nanomechanical properties of polymers, ultra-low-k dielectrics, fracture and toughening of polymer nanocomposites

Materials and Manufacturing Technology (MMT) is concerned with the generation and application of knowledge relating the composition, structure, and processing of materials to their properties and applications, as well as the manufacturing technologies needed for production. During the past two decades, MMT has become an important component of modern engineering education, partly because of the increased level of sophistication required of engineering materials in a rapidly changing technological society, and partly because the selection of materials has increasingly become an integral part of almost every modern engineering design. In fact, further improvements in design are now viewed more and more as primarily materials and manufacturing issues. Both the development of new materials and the understanding of present-day materials demand a thorough knowledge of basic engineering and scientific principles including, for example, crystal structure, mechanics, mechanical behavior, electronic, optical and magnetic properties, thermodynamics, phase equilibria, heat transfer, diffusion, and the physics and chemistry of solids and chemical reactions.

The field of MMT ranks high on the list of top careers for scientists and engineers. The services of these engineers and scientists are required in a variety of engineering operations dealing, for example, with design of semiconductors and optoelectronic devices, development of new technologies based on composites and high-temperature materials, biomedical products, performance (quality, reliability, safety, energy efficiency) in automobile and aircraft components, improvement in nondestructive testing techniques, corrosion behavior in refineries, radiation damage in nuclear power plants, fabrication of steels, and construction of highways and bridges.

Subjects of interest in Materials and Manufacturing Technology cover a wide spectrum, ranging from metals, optical and electronic materials to superconductive materials, ceramics, advanced composites, and biomaterials. In addition, the emerging new research and technological areas in materials are in many cases interdisciplinary. Accordingly, the principal objective of the graduate curriculum is to integrate a student's area of emphasis—whether it be chemical processing and production, electronic and photonic materials and devices, electronic manufacturing and packaging, or materials engineering—into the whole of materials and manufacturing technology. Such integration will increase familiarity with other disciplines and provide students with the breadth they need to face the challenges of current and future technology.

Students with a bachelor's degree may pursue either the M.S. or Ph.D. degree in Engineering with a concentration in Materials and Manufacturing Technology (MMT). If students choose to enter the Ph.D. program directly, it is a requirement that they earn an M.S. degree along the way toward the completion of their Ph.D. degree.

Recommended Background

Given the nature of Materials and Manufacturing Technology as an interdisciplinary program, students having a background and suitable training in either Materials, Engineering (Biomedical, Civil, Chemical, Electrical, and Mechanical), or the Physical Sciences (Physics, Chemistry, Geology) are encouraged to participate. Recommended background courses include an introduction to materials, thermodynamics, mechanical properties, and electrical/optical/magnetic properties. A student with an insufficient background may be required to take remedial undergraduate courses following matriculation as a graduate student.

Core Requirement

Because of the interdepartmental nature of the concentration, it is important to establish a common foundation in Materials and Manufacturing Technology (MMT) for students from various backgrounds. This foundation is sufficiently covered in MMT courses that are listed below and that deal with the following topics: MSE205 (Materials Physics); CEE242 (Advanced Strength of Materials); MAE252 (Fundamentals of Microfabrication); MAE247/EECS278 (Micro-Systems Design).

Electives

Electives are grouped into four areas of emphasis.

Chemical Processing and Production: Chemistry 213 (Chemical Kinetics), CBEMS210 (Reaction Engineering), CBEMS220 (Transport Phenomena), CBEMS230 (Applied Engineering Mathematics I), CBEMS240 (Chemical Engineering Thermodynamics), MSE210 (Materials Characterization Techniques and Analysis).

Electronic and Photonic Materials and Devices: BME210 (Cell and Tissue Engineering), EECS174 (Fundamentals of Semiconductor Devices), EECS188 (Optical Electronics), EECS274 (Biomedical Microdevices), EECS276 (Solid-State Electronics), EECS277A-B (Advanced Semiconductor Devices I, II), EECS277C (Nanotechnology), EECS285A (Optical Communications), EECS285B (Lasers and Photonics), EECS280A-B (Advanced Engineering Electromagnetics I, II), MSE272 (Microelectronic and Photonic Materials and Technology.

Electronic Manufacturing and Packaging: EECS273 (Electronics Packaging), CBEMS280 (Optoelectronics Packaging), EECS279/MAE249 (Micro-Sensors and Actuators), EECS285A (Optical Communications), EECS285B (Lasers and Photonics), EECS285C (Integrated and Fiber Optics), MSE272 (Microelectronic and Photonic Materials and Technology), MAE253 (BIOMEMS).

Materials Engineering: Chemistry 225 (Polymer Chemistry: Synthesis and Characterization of Polymers), Chemistry 226 (Polymer Materials: Polymer Structure-Property Relationship), Physics 238A-B-C (Condensed Matter Physics), MSE210 (Materials Characterization Techniques and Analysis), MSE251 (Dislocation Theory), MSE252 (Theory of Diffusion), MSE254 (Polymer Science and Engineering), MSE255A (Design with Ceramic Materials), MSE255B (Science of Composite Materials), MSE256A (Mechanical Behavior of Engineering Materials), MSE256B (Fracture of Engineering Materials), MSE266 (Science of Nanoscale Materials and Devices), MSE268 (Principles of Coatings, Thin Films, and Multi-layers), MSE259 (Transmission of Electron Microscopy), MSE263 (Computer Techniques in Experimental Materials Research).

It should be noted that specific course requirements within the area of emphasis are decided based on consultation with the Director of the MMT concentration.

MASTER OF SCIENCE DEGREE

Two options are available for M.S. degree students: a thesis option and a comprehensive examination option. Both options require the completion of at least 36 units of study.

Plan I. Thesis Option

For the thesis option, students are required to complete an original research project and write an M.S. thesis. A committee of three full-time faculty members is appointed to guide the development of the thesis. Students must also obtain approval for a complete program of study from the program director. At least 21 units must be taken from courses numbered 200–289, among which at least 12 units are from MMT core courses and at least nine units are in the area of emphasis approved by the faculty advisor and the graduate advisor. Up to eight units of CBEMS296, EECS296, MAE 296, BME 296, or CEE296 and up to eight units of upper-division undergraduate elective courses taken as a graduate student at UCI can be applied toward the 36-unit requirement.

Plan II. Comprehensive Examination Option

For the comprehensive examination option, students are required to complete minimally 36 units of study. At least 24 units must be taken from courses numbered 200–289, among which at least 12 units are from MMT core courses and at least 12 units are in the area of emphasis approved by the faculty advisor and the graduate advisor. Up to eight units of upper-division undergraduate elective courses taken as a graduate student at UCI can be applied toward the 36-unit requirement. In the last quarter, an oral comprehensive examination on the contents of study will be given by a committee of three faculty members including the advisor and two members appointed by the program director. Part-time study for the M.S. degree is available and encouraged for engineers working in local industries. Registration for part-time study must be approved in advance by the MMT program director, the School's Associate Dean, and the Graduate Dean.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. degree in Engineering with a concentration in Materials and Manufacturing Technology requires a commitment on the part of the student to dedicated study and collaboration with the faculty. Ph.D. students are selected on the basis of outstanding demonstrated potential and scholarship. Applicants must hold the appropriate prerequisite degrees from recognized institutions of high standing. Students entering with a master's degree may be required to take additional course work, to be decided in consultation with the graduate advisor and the program director. Students without a master's degree may be admitted into the Ph.D. program. However, these students will be required to complete the degree requirements above for the master's degree prior to working on doctoral studies. After substantial academic preparation, Ph.D. candidates work under the supervision of faculty advisors. The process involves immersion in a research atmosphere and culminates in the production of original research results presented in a dissertation.

Milestones to be passed in the Ph.D. program include the following: acceptance into a research group by the faculty advisor during the student's first year of study, successful completion of the Ph.D. preliminary examination during years one or two, development of a research proposal, passing the qualifying examination during year three (second year for those who entered with a master's degree), and the successful completion and defense of the dissertation during the fourth or fifth year. There is no foreign language requirement.

The degree is granted upon the recommendation of the doctoral committee and the Dean of Graduate Division. The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years.

Graduate Courses in Engineering

(Schedule of Classes **designation: Engr)**

ENGR250 Calit2 Seminar: Trends in Optical Communication (1 to 4). Addresses the current status and future trends of fiberoptic materials, components, systems, and manufacturing that are the foundation of the ongoing fiberoptic communication revolution, through weekly seminar presentations by leading experts from both industry and academia. Prerequisites: graduate standing and consent of instructor.

ENG260A Technology for Life (3). Engineering techniques including physics, chemistry, biology, and micro/nano technology for enabling life sciences research in the areas of genomics/proteomics, cells, tissues/organs, and biomolecules. Prerequisite: One course from Physics 106, Chemistry 128L, Biological Sciences M118L, BME145, BME146, or equivalent, or consent of instructor.

ENGR260B Technology of Life (3). Engineering perspectives of evolution in life sciences including the physics, chemistry, and mechanics of various life systems such as DNA, RNA, biomolecules, cells, organs. Prerequisite: One course from Physics 146A, Chemistry 128, Biological Sciences D114, BME50A, BME50B, or equivalent, or consent of instructor.

ENGR295 Special Topics in Engineering (1 to 4). Prerequisites vary. May be repeated for credit as topics vary.

ENGR296 Master of Science Thesis Research (4 to 12). Individual research or investigation conducted in the pursuit of preparing and completing the thesis required for the M.S. in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF BIOMEDICAL ENGINEERING

3120 Natural Sciences II; (949) 824-3941
Abraham Lee, **Department Chair**

Faculty

Michael W. Berns: Photomedicine, laser microscopy, biomedical devices
Elliot Botvinick: Laser microbeams, cellular mechanotransduction, mechanobiology
James P. Brody: Bioinformatics, micro-nanoscale systems
Zhongping Chen: Biomedical optics, optical coherence tomography, bioMEMS, and biomedical devices
Bernard Choi: Biomedical optics, *in vivo* optical imaging, microvasculature, light-based therapeutics
Steven C. George: Physiological and multi-scale integrative modeling, gas exchange, computational methods, tissue engineering
Enrico Gratton: Design of new fluorescence instruments, protein dynamics, single molecule, fluorescence microscopy, photon migration in tissues
Elliot E. Hui: Microscale tissue engineering, bioMEMS, cell-cell interactions, global health diagnostics
Tibor Juhasz: Laser-tissue interactions; high-precision microsurgery with lasers; laser applications in Ophthalmology; corneal biomechanics
Michelle Khine: Development of novel nano- and micro-fabrication technologies and systems for single cell analysis, stem cell research, and in-vitro diagnostics
Frithjof Kruggel: Biomedical signal and image processing, anatomical and functional neuroimaging in humans, structure-function relationship in the human brain
Abraham Lee: Lab-on-a-Chip health monitoring instruments, drug delivery micro/nanoparticles, integrated cell sorting microdevices, lipid vesicles as carriers for cells and biomolecules, high throughput droplet bioassays, and microfluidic tactile sensors
Wendy Liu: Biomaterials, microdevices in cardiovascular engineering, cell-cell and cell-micro-environment interactions, cell functions and controls
Zoran Nenadic: Adaptive biomedical signal processing, control algorithms for biomedical devices, brain-machine interfaces, modeling and analysis of biological neural networks
William C. Tang: Microelectromechanical systems (MEMS) nanoscale engineering for biomedical applications, microsystems integration, microimplants, microbiomechanics, microfluidics
Bruce Tromberg: Photon migration, diffuse optical imaging, non-linear optical microscopy, photodynamic therapy

Affiliated Faculty

Mark Bachman: Micro-electro-mechanical systems (MEMS) BIOMEMS, and optoelectronics nonstandard chip processing, physics of small systems
Pierre Baldi: Bioinformatics/computational biology and probabilistic modeling/artificial intelligence and machine learning
Lubomir Bic: Distributed computing, parallel processing in biological systems
Bruce Blumberg: Biorobotics, functional genomics
Peter Burke: Biomedical nanotechnology
Dan M. Cooper: Impact of exercise on exhaled biological gases; novel methods of assessing physical activity in infants and children using biomems; impact of oxygen gradients on neutrophil trafficking
Robert Corn: Surface chemistry, surface spectroscopy, surface biochemistry and biosensing
Carl Cotman: Computational methods in brain aging, Alzheimer's disease
Nancy A. Da Silva: Molecular biotechnology, metabolic engineering, environmental biotechnology
James Earthman: Biomaterials, dental, and orthopaedic implants
Gregory Evans: Tissue engineering, adult stem cells, embryonic stem cells, nerve regeneration
Charless Fowlkes: Bioimage analysis, computational modeling, gene regulation, development
Ron Frostig: Optical methods for brain imaging, functional organization of the cortex
John P. Fruehauf: In-vitro cancer models using 3-D tissue systems to predict drug response
Steven Gross: In-vivo function of molecular motors, optical tweezers
Zhibin Guan: Chemistry of biomaterials
Gultekin Gulsen: Diffuse optical tomography, fluorescence tomography, MRI, multi-modality imaging
Ranjan Gupta: In-vivo models for chronic nerve injury; in-vitro models for nerve injury
Christopher C. W. Hughes: Tissue engineering, growth and patterning of blood vessels
James V. Jester: Mechanics of wound healing and the inter-relationship of mechanical force, cell-matrix interaction, and gene expression; cellular basis of corneal transparency and the role of water-soluble proteins in isolated cell light scattering; three-dimensional and temporal imaging of cells in intact living tissue
Joyce Keyak: Bone mechanics, finite element modeling, quantitative computed tomography, osteoporosis, tumors, radiation therapy
Baruch D. Kuppermann: Diabetic retinopathy, age-related macular degeneration, the ocular complications of AIDS, drug delivery to the posterior segment of the eye, ocular imaging, retinal cell toxicology
Young Jik Kwon: Gene therapy, drug delivery, cancer-targeted therapeutics, stem cell bioreactors, biomaterials, cell and tissue engineering, mathematical modeling
Arthur D. Lander: Systems biology of morphogenesis; spatially dynamic models of development, signaling and growth; developmental control
Richard Lathrop: Computational methods in protein engineering
Thay Lee: Orthopaedic biomechanics, investigating the shoulder, knee, and spine focusing on sports, trauma, and total joint replacement
Guann-Pyng Li: Microelectromechanical systems for biomedical applications
Shin Lin: Electronic and optical measurements of physiological and bioenergetic changes associated with mind-body practices and therapies
John Longhurst: Cardiovascular neural reflex control mechanisms from somatic and visceral regions including the heart and abdominal organs; integrative, central neural regulation of the autonomic outflow, with reference to cardiovascular reflex responses and including regulation of cardiovascular function by acupuncture
John S. Lowengrub: Mathematical material science, mathematical fluid dynamics, mathematical biology, computational mathematics, cancer modeling, nanomaterials, quantum dots, complex fluids
Ray Luo: Computational structural biology, mathematical biology, molecular mechanisms of p53 cancer mutants
Marc J. Madou: Fundamental aspects of micro/nano-electro-mechanical systems (MEMS/NEMS), biosensors, nanofluidics, biomimetics
Sayed (Ali) Mirnajafizadeh: Biomechanics of porcine and bovine pericardial heart valve bioprostheses, design and development of bioreactors for mechanical training of tissue engineered constructs for cardiovascular application, functional tissue engineering
Sabee Molloi: Medical x-ray imaging physics, application of digital radiography to cardiac imaging, coronary artery flow measurement, digital image processing
J. Stuart Nelson: Phototherapy, dermatology, cell biology, biomedical device development
Qing Nie: Cell and developmental biology, systems biology and computational biology, and computational mathematics
David Reinkensmeyer: Skeletal muscle control, biorobotics, rehabilitation
Phillip C.-Y. Sheu: Semantic computing, complex biomedical systems
Andrei Shkel: Silicon integrated micro-electro-mechanical sensors and actuators
Padhraic Smyth: Applied statistics, pattern recognition, bioinformatics, image analysis, time-series analysis, data mining, and machine learning
Ramesh Srinivasan: Perception, development and cortical dynamics
Roger F. Steinert: Lasers for refractive and cataract surgery; artificial lenses and artificial corneas
Adam Summers: Impact of material properties on the form and structure of organisms
Vasan Venugopalan: Application of laser radiation for medical diagnostics, therapeutics, and biotechnology; laser-induced thermal, mechanical, and radiative transport processes
Szu-Wen Wang: Biomolecular engineering, nanostructured biomaterials, drug delivery
H. Kumar Wickramasinghe: Nano-bio measurements and technology, ultrafast DNA sequencing, single cell assays, nanoscale delivery and measurements within living cells
Brian Wong: Biomedical optics, tissue engineering, and development of surgical instrumentation
Albert Yee: Nanofabrication of soft materials, physics of polymer thin films, nanomechanical properties of polymers, ultra-low-k dielectrics, fracture and toughening of polymer nanocomposites
Tau-Mu Yi: Quantitative description of G-protein signaling, and the analysis of the robustness of biological networks
Fan-Gang Zeng: Cochlear implants and auditory neuroscience

Affiliated faculty are from the Schools of Biological Sciences, Physical Sciences, and Medicine; the Donald Bren School of Information and Computer Sciences; and The Henry Samueli School of Engineering.

Biomedical engineering combines engineering expertise with medical needs for the enhancement of health care. It is a branch of engineering in which knowledge and skills are developed and applied to define and solve problems in biology and medicine. Students choose the biomedical engineering field to be of service to people, for the excitement of working with living systems, and to apply advanced technology to the complex problems of medical care. Biomedical engineers may be called upon to design instruments and devices, to bring together knowledge from many sources to develop new procedures, or to carry out research to acquire knowledge needed to solve new problems.

During the last 20 years, we have witnessed unprecedented advances in engineering, medical care, and the life sciences. The combination of exploding knowledge and technology in biology, medicine, the physical sciences, and engineering, coupled with the changes in the way health care will be delivered in the next century, provide a fertile ground for biomedical engineering. Biomedical engineering, at the confluence of these fields, has played a vital role in this progress. Traditionally, engineers have been concerned with inanimate materials, devices, and systems, while life scientists have investigated biological structure and function. Biomedical engineers integrate these disciplines in a unique way, combining the methodologies of the physical sciences and engineering with the study of biological and medical problems. The collaboration between engineers, physicians, biologists, and physical scientists is an integral part of this endeavor and has produced many important discoveries in the areas of artificial organs, artificial implants, and diagnostic equipment.

The Department offers a B.S. degree in Biomedical Engineering, a four-year engineering curriculum accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone (410) 347-7700. This program prepares students for a wide variety of careers in Biomedical Engineering in industry, hospitals, and research laboratories or for further education in graduate school.

The Department also offers a B.S. degree in Biomedical Engineering: Premedical, a four-year engineering curriculum taken with required premedical courses. It is one of many majors that can serve as preparation for further training in medical, veterinary, or allied health professions. It is also suitable for students interested in pursuing graduate work in Biomedical Engineering and other biomedical areas such as physiology, neurosciences, and bioinformatics. The curriculum has less engineering content but more biological sciences than the Biomedical Engineering major. The undergraduate major in Biomedical Engineering: Premedical is not designed to be accredited, therefore is not accredited by ABET.

Areas of graduate study and research include biophotonics, biomedical nanoscale systems, biomedical computational technologies, and tissue engineering.

Undergraduate Major in Biomedical Engineering

Program Educational Objectives: Graduates of the Biomedical Engineering Program will (1) promote continuous improvement in the field of biomedical engineering; (2) communicate effectively the relevant biomedical engineering problem to be solved across the engineering, life science, and medical disciplines; (3) apply critical reasoning as well as quantitative and design skills to identify and solve problems in biomedical engineering; (4) lead and manage biomedical engineering projects in industry, government, or academia that involve multidisciplinary team members. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

Biomedical Engineering students learn engineering and principles of biology, physiology, chemistry, and physics. They may go on to design devices to diagnose and treat disease, engineer tissues to repair wounds, develop cutting-edge genetic treatments, or create computer programs to understand how the human body works.

The curriculum emphasizes education in the fundamentals of engineering sciences that form the common basis of all engineering subspecialties. Education with this focus is intended to provide students with a solid engineering foundation for a career in which engineering practice may change rapidly. In addition, elements of bioengineering design are incorporated at every level in the curriculum. This is accomplished by integration of laboratory experimentation, computer applications, and exposure to real bioengineering problems throughout the program. Students also work as teams in senior design project courses to solve multidisciplinary problems suggested by industrial and clinical experience.

NOTE: Students may complete only one of the following programs: the major in Biomedical Engineering, the major in Biomedical Engineering: Premedical, or the minor in Biomedical Engineering.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of chemistry (with laboratory), and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOMEDICAL ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements

Mathematics and Basic Science Courses: Students must complete a minimum of 48 units of mathematics and basic sciences including:

Core Courses: Mathematics 2A-B, 2D, 2J, 3D, 2E, and Statistics 8; Chemistry 1A-B-C and 1LB-LC; Physics 7B/7LB or Physics 7C/7LC; Physics 7D-E, 7LD; Biological Sciences 194S.

Engineering Topics Courses: Students must complete a minimum of 28 units of engineering design including:

Core Courses: ENGR15, EECS12, EECS70A, BME1, BME50A-B, BME110A-B-C, BME111, BME120, BME121, BME130, BME140, BME150, BME160, BME170, BME180A-B-C, BME197.

Engineering Electives: Students select, with the approval of a faculty advisor a minimum of 12 units of engineering topics needed to satisfy school and major requirements.

(The nominal Biomedical Engineering program will require 189 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary).

Optional Specialization in Biophotonics: requires BME135, BME136, and either BME137 or EECS180. These courses will also satisfy the Engineering Electives requirement.

Optional Specialization in Micro and Nano Biomedical Engineering: requires one course from BME145 or EECS179; and two courses from BME146, BME147, or BME148. These courses will also satisfy the Engineering Electives requirement.

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Biomedical Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their faculty advisor. Biomedical Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Biomedical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
EECS12	Physics 7B/7LB	Physics 7D, 7LD
BME1	or Physics 7C/7LC	
	General Education	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E	EECS70A	Statistics 8
General Education	BME50A	BME50B
	General Education	ENGR15
Junior		
BME110A	BME110B	BME110C
BME120	BME121	BME111
BME130	BME140	BME150
General Education	General Education	Bio. Sci. 194S
		General Education

Senior		
BME180A	BME180B	BME170
BME160	Engineering Elective	BME 180C
Engineering Elective	General Education	Engineering Elective
General Education	General Education	General Education
BME197 Seminar		

Undergraduate Major in Biomedical Engineering: Premedical

The major program objective is to prepare students for medical school. The curriculum is designed to meet the requirements for admission to medical schools, but is also suitable for those planning to enter graduate school in biomedical engineering, physiology, biology, neurosciences, or related fields. It has less engineering content and more biological sciences than the accompanying Biomedical Engineering major. It is one of many majors that can serve as preparation for further training in medical, veterinary, or allied health professions.

The Biomedical Engineering: Premedical curriculum provides future physicians with a quantitative background in biomechanics, bioelectronics, and biotransport. Such a background is increasingly important because of the heavy utilization of biomedical technology in modern medical practice. The curriculum includes courses in the sciences that satisfy the requirements of most medical schools. The education experience is enriched through a design course where students work as teams to solve Biomedical Engineering problems inspired by the clinical arena at the UCI Medical Center.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of chemistry (with laboratory), and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOMEDICAL ENGINEERING: PREMEDICAL

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements

Mathematics and Basic Science Courses: Students must complete a minimum of 48 units of mathematics and basic sciences including: Mathematics 2A-B, 2D, 2J, and 3D; Chemistry 1A-B-C, 1LB-LC, 51A-B-C, and 51LA-LB; Physics 7B/7LB or Physics 7C/7LC; Physics 7D-E and 7LD. Students select, with the approval of a faculty advisor, any additional basic science course needed to satisfy school and major requirements.

Engineering Topics Courses: Students must complete the following engineering topics including: Biological Sciences 97, 98, 99, D103 or D104, 100L, D111L, E112L or M114L or M116L, 194S; EECS12; BME1, BME50A-B, BME110A-B, BME111, BME120, BME121, BME130, BME150, BME160. Students select, with the approval of a faculty advisor, at least three additional engineering topics courses needed to satisfy school and major requirements.

(The nominal Biomedical Engineering: Premedical program will require 190 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary).

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Biomedical Engineering: Premedical. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their faculty advisor. Biomedical Engineering: Premedical majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Biomedical Engineering: Premedical

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
EECS12	Physics 7B/7LB	Physics 7D, 7LD
BME1	or Physics 7C/7LC	
	General Education	
Sophomore		
Mathematics 2J	Mathematics 3D	Chemistry 51C
Chemistry 51A, 51LA	Chemistry 51B, 51LB	BME50B
Physics 7E	BME50A	General Education
General Education	General Education	General Education
Junior		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
BME110A	BME110B	BME111
BME120	BME121	BME150
BME130	Engineering Elective	General Education
Senior		
Bio. Sci. 100L	Bio. Sci. D103 or D104	Bio. Sci. E112L or
Bio. Sci. 194S	Bio. Sci. D111L	M114L or M116L
BME160	Engineering Elective	Engineering Elective
General Education	General Education	General Education

MINOR IN BIOMEDICAL ENGINEERING

The minor in Biomedical Engineering requires a total of nine courses—two advanced mathematics courses, five core Biomedical Engineering courses, and two Biomedical Engineering electives. Some of these courses may include prerequisites that may or may not be part of a student's course requirements for their major. Private biomedical industry has indicated a keen interest in engineers that have a more traditional engineering degree (i.e., electrical engineering), but also possess some in-depth knowledge of biomedical systems. Hence, the minor in Biomedical Engineering is designed to provide a student with the introductory skills necessary to perform as an engineer in the biomedical arena.

Admissions. Students interested in the minor in Biomedical Engineering must have a UCI cumulative GPA of 2.5 or higher.

NOTE: Students may not receive both a minor in Biomedical Engineering and a specialization in Biochemical Engineering within the Chemical Engineering major.

Requirements for the Minor in Biomedical Engineering

Mathematics Courses: Mathematics 2J, 3D.

Engineering Topics Courses: BME1, BME50A-B, BME120, BME121.

Technical Electives: Students select, with the approval of a faculty advisor, two technical elective courses: BME110A, BME110B, BME130, BME135 (same as Biological Sciences D130), BME136, BME140, BME160, BME199, CBEMS124, CBEMS126, CBEMS154, EECS179, EECS188.

Graduate Study in Biomedical Engineering

The Biomedical Engineering faculty have special interest and expertise in four thrust areas: Biophotonics, Biomedical Nanoscale Systems, Biomedical Computational Technologies, and Tissue Engineering. Biophotonics faculty are interested in photomedicine, laser microscopy, optical coherence tomography, medical imaging, and phototherapy. Biomedical Nanoscale Systems faculty are interested in molecular engineering, polymer chemistry, molecular motors, design and fabrication of microelectromechanical systems (MEMS), integrated microsystems to study intercellular signaling, and single molecule studies of protein dynamics. Biomedical Computation faculty are interested in computational biology, biomedical signal and image processing, bioinformatics, computational methods in protein engineering, and data mining.

The Department offers the M.S. and Ph.D. degrees in Biomedical Engineering.

Required Background

Because of its interdisciplinary nature, biomedical engineering attracts students with a variety of backgrounds. Thus, the requirements for admission are tailored to students who have a bachelor's degree in an engineering, physical science, or biological science discipline, with a grade point average of 3.0 or higher in their upper-division course work. The minimum course work requirements for admission are six quarters of calculus through linear algebra and ordinary differential equations, three quarters of calculus-based physics, three quarters of chemistry, and two quarters of biology. Students without a physics, chemistry, or engineering undergraduate degree may be required to take additional relevant undergraduate engineering courses during their first year in the program; any such requirements will be specifically determined by the BME Graduate Committee on a case-by-case basis and will be made known to the applicant at the time of acceptance to the program.

The recommended minimum combined verbal and quantitative portion of the GRE is 1200, or a minimum combined MCAT score in Verbal Reasoning, Physical Sciences, and Biological Sciences problems of 30. A minimum score of 600 on the Test of English as a Foreign Language (TOEFL) is recommended of all international students whose native language is not English. In addition, all applicants must submit three letters of recommendation.

Exceptionally promising UCI undergraduates may apply for admission through The Henry Samueli School of Engineering's accelerated M.S. and M.S./Ph.D. program, however, these students must satisfy the course work and letters of recommendation requirements described above.

Core Requirement

All students are required to take a set of core courses which total 23 units: BME210, BME220, BME221, BME230A, BME230B, BME240.

Elective Requirement

The remaining 13 units required to fulfill the course requirements for the M.S. and Ph.D. degree are comprised of elective courses offered within The Henry Samueli School of Engineering and the Schools of Biological Sciences, Physical Sciences, and Medicine. A minimum of eight of the elective units must be taken from The Henry Samueli School of Engineering. The group of elective courses must be approved by the BME Graduate Committee, for M.S. students, or, for Ph.D. students, the student's graduate advisory committee, and are chosen to meet the specific needs of each student. The electives must provide breadth in biomedical engineering, but also provide specific skills necessary to the specific research the student may undertake as part of the degree requirements.

Areas of Emphasis

Although a student is not required to formally choose a specific research focus area, four research thrust areas have been identified for the program: Biophotonics, Biomedical Nanoscale Systems, Biomedical Computational Technologies, and Tissue Engineering. These areas capitalize on existing strengths within The Henry Samueli School of Engineering and UCI as a whole, interact in a synergistic fashion, and will train biomedical engineers who are in demand in both private industry and academia.

Biophotonics. This research area includes the use of light to probe individual cells and tissues and whole organs for diagnostic and therapeutic purposes. The research areas include both fundamental investigation on the basic mechanisms of light interaction with biological systems and the clinical application of light to treat and diagnose disease. Current and future foci of the faculty are (1) microscope-based optical techniques to manipulate and study cells and organelles; (2) development of optically based technologies for the non-invasive diagnosis of cells and tissues using techniques that include fiber-optic-based sensors, delivery systems, and imaging systems; and (3) development of optically based devices for minimally invasive surgery.

Nanoscale Systems. This class of research areas encompasses the understanding, use, or design of systems that are at the micron or submicron level. Current strengths within The Henry Samueli School of Engineering and the UCI faculty as a whole include biomaterials, micro-electromechanical systems (MEMS), and the design of new biomedical molecules. The focus of biomedical engineering research in this area is the integration of nanoscale systems with the needs of clinical medicine. Projected areas of growth include (1) micro-electromechanical systems (MEMS) for biomedical devices and biofluid assay; (2) programmable DNA/molecular microchip for sequencing and diagnostics; and (3) biomaterials and self-assembled nanostructures for biosensors and drug delivery.

Biomedical Computational Technologies. Biomedical computational technologies include both advanced computational techniques, as well as advanced biomedical database systems and knowledge-base systems. Computational technologies that will be developed in this research area include (1) methods for biomedical analysis and diagnosis such as physical modeling of light-tissue interactions, atomic-level interactions, image processing, pattern recognition, and machine-learning algorithms; (2) language instruction and platform standardization; and (3) machine-patient interfaces. Areas of research related to biomedical database systems include the development of new technologies which can capture the rich semantics of biomedical information for intelligent reasoning.

Tissue Engineering. The term *tissue engineering* was officially coined at a National Science Foundation workshop in 1988 to mean "the application of principles and methods of engineering and life sciences toward fundamental understanding of structure-function relationships in normal and pathological mammalian tissues and the development of biological substitutes to restore, maintain, or improve tissue function." Tissue engineering draws on

experts from chemical engineering, materials science, surgery, genetics, and related disciplines from engineering and the life sciences. Much of the current research in the field involves growing cells in three-dimensional structures instead of in laboratory dishes. For the most part, cells grown in a flat dish tend to behave as individual cells. But grow a cell culture in a three-dimensional structure, and the cells begin to behave as they would in a tissue or organ. Tissue engineers are testing different methods of growing tissue and organ cells in three-dimensional scaffolds that dissolve once the cells reach a certain mass. The hope is that these cell cultures will mature into fully functional tissues and organs.

MASTER OF SCIENCE DEGREE

The M.S. degree requires conducting a focused research project and completing designated course work. Students must select a thesis advisor and complete an original research investigation including a written thesis, and obtain approval of the thesis by a thesis committee.

In addition, students must successfully complete a minimum of 36 units of course work beyond the bachelor's degree, at least 28 of which must be at the 200 level including the 23 units of core course requirements. A maximum of eight M.S. research units (i.e., BME296) may be applied toward the 36-unit requirement. The degree will be granted upon the recommendation of the Chair of the Department of Biomedical Engineering and The Henry Samueli School of Engineering Associate Dean of Student Affairs.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. degree requires the achievement of an original and significant body of research that advances the discipline. Students with a B.S. degree may enter the Ph.D. program directly, provided they meet the background requirements described above. The Graduate Committee will handle applicants on a case-by-case basis, and any specific additional courses required by the student will be made explicit at the time of admission.

Each student is matched with a faculty advisor, and an individual program of study is designed by the student and a faculty advisory committee. Two depth courses are required beyond that of the M.S. degree in preparation for the qualifying examination. Four milestones are required: (1) successful completion of 36 units of course work beyond the bachelor's degree, at least 28 of which must be at the 200 level including the 23 units of core course requirements; (2) successful completion of a preliminary examination at the Ph.D. competency level; (3) formal advancement to candidacy by successfully passing a qualifying examination; and (4) completion of a significant body of original research and the submission of an acceptable written dissertation and its successful oral defense.

The preliminary examination will normally be taken at the end of the first year (May). A student must take it within two years of matriculating in the program, and must either have passed all of the core courses or have an M.S. degree prior to taking the examination. The Preliminary Examination Committee prepares the examination and sets the minimum competency level for continuing on in the Ph.D. program. Students who fail to pass at the Ph.D. level may retake the examination the following year. Students who fail the second attempt will not be allowed to continue in the program. However, they may be eligible to receive a Master's degree upon completion of an original research investigation including a written thesis (refer to Master of Science Degree requirements). In the event a Ph.D. student decides not to continue in the program, the thesis-only option for the M.S. degree will still be enforced. After passing the preliminary examination at the Ph.D. competency level, students are matched with a BME faculty advisor and design an individual program of study with their advisor.

Advancement to candidacy must be completed by the end of the summer of the second year following the passing of the preliminary examination. (Special exceptions can be made, but a formal request with justification must be supplied in writing to the Associate Chair of Biomedical Engineering and Director of Graduate Studies.) Students who do not pass the qualifying examination within two quarters after the summer of their second year will be ineligible to continue in the program. The qualifying examination follows campus and The Henry Samueli School of Engineering guidelines and consists of an oral and written presentation of original work completed thus far, and a coherent plan for completing a body of original research. The qualifying examination is presented to the student's graduate advisory committee, which is selected by the student and faculty advisor and must have a minimum of five faculty (including the faculty advisor). Of these five faculty, three must be BME faculty. In addition, one faculty member must have his/her primary appointment outside the Department of Biomedical Engineering. The fifth member must have his/her primary appointment outside of The Henry Samueli School of Engineering.

The Ph.D. is awarded upon submission of an acceptable written dissertation and its successful oral defense. The degree is granted upon the recommendation of the graduate advisory committee and the Dean of Graduate Studies. The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years.

GRADUATE PROGRAM IN MATHEMATICAL AND COMPUTATION BIOLOGY

The graduate program in Mathematical and Computational Biology (MCB) is a one-year "gateway" program designed to function in concert with selected department programs, including the Ph.D. in Biomedical Engineering. Detailed information is available online at http://mcsb.bio.uci.edu/ and in the School of Biological Sciences section of the *Catalogue*.

Courses in Biomedical Engineering

***(Schedule of Classes* designation: BmE)**

LOWER-DIVISION

BME1 Introduction to Biomedical Engineering (3) F. Introduction to the central topics of biomedical engineering. Offers a perspective on bioengineering as a discipline in a seminar format. Principles of problem definition, team design, engineering inventiveness, information access, communication, ethics, and social responsibility are emphasized. (Design units: 1)

BME50A-B Cell and Molecular Engineering (4-4) W, S. Physiological function from a cellular, molecular, and biophysical perspective. Applications to bioengineering design. (Design units: 2-2)

UPPER-DIVISION

BME110A-B-C Biomechanics I, II, III (4-4-4) F, W, S. Introduction to continuum mechanics of both living and non-living systems. Laws of motion and free-body diagrams. Stresses, deformation, compatibility conditions, and constitutive equations. Properties of common fluids and solids. Field equations and boundary conditions. Applications to bioengineering designs. Prerequisites: Physics 7D, 7LD, 7E. BME110A-B-C must be taken in the same academic year. (Design units: 1-1-1)

BME111 Design of Biomaterials (4) S. Natural and synthetic polymeric materials. Metal and ceramics implant materials. Materials and surface characterization and design. Wound repair, blood clotting, foreign body response, transplantation biology, biocompatibility of material. Artificial organs and medical devices. Government regulations. Corequisite or prerequisite: BME 50B. (Design units: 3)

BME120 Quantitative Physiology: Sensory Motor Systems (4) F. A quantitative and systems approach to understanding physiological systems. Systems covered include the nervous and musculoskeletal systems. Prerequisite: Mathematics 3D or equivalent, or consent of instructor. Concurrent with BME220. (Design units: 2)

BME121 Quantitative Physiology: Organ Transport Systems (4) W. A quantitative and systems approach to understanding physiological systems. Systems covered include the cardiopulmonary, circulatory, and renal systems. Prerequisite: Mathematics 3D or equivalent, or consent of instructor. Same as CBEMS104. Concurrent with BME221, CBEMS204. (Design units: 1).

BME130 Biomedical Signals and Systems (4) F. Analysis of analog and digital biomedical signals; Fourier series expansions; difference and differential equations; convolution. System models: discrete-time and continuous-time linear time-invariant systems; Laplace and Fourier transforms. Analysis of signals and systems using computer programs. Prerequisites: Mathematics 2J and 3D; Statistics 8 recommended. (Design units: 1)

BME135 Photomedicine (4). Studies the use of optical and engineering-based systems (laser-based) for diagnosis, treating diseases, manipulation of cells and cell function. Physical, optical, and electro-optical principles are explored regarding molecular, cellular, organ, and organism applications. Prerequisites: Physics 3C or 7D, or EECS12, or consent of instructor. Same as Biological Sciences D130. (Design units: 0)

BME136 Engineering Optics for Medical Applications (4). Fundamentals of optical systems design, integration, and analysis used in biomedical optics. Design components: light sources, lenses, mirrors, dispersion elements, optical fibers, detectors. Systems integration: microscopy, radiometry, interferometry. Optical system analysis: resolution, modulation transfer function, deconvolution, interference, tissue optics, noise. Prerequisites: BME130, BME135; EECS180 or consent of instructor. Concurrent with BME236. (Design units: 3)

BME137 Introduction to Biomedical Imaging (4). Introduction to imaging modalities widely used in medicine and biology, including x-ray, computed tomography (CT), nuclear medicine (PET and SPET), ultrasonic imaging, magnetic resonance imaging (MRI), optical tomography, imaging contrast, imaging processing, and complementary nature of the imaging modalities. Prerequisite: BME130, EECS150A, or EECS150B; or equivalent. (Design units: 1).

BME140 Design of Biomedical Electronics (4) W. Analog and digital circuits in bioinstrumentation. AC and DC circuit analysis, design and construction of filter and amplifiers using operational amplifier, digitization of signal and data acquisition, bioelectrical signal, design and construction of ECG instrument, bioelectrical signal measurement and analysis. Prerequisites: BME130 and EECS70A. (Design units: 3)

BME145 MEMS and Nanotechnology for Biomedicine and Biotechnology (4). Basic concepts of MEMS and nanotechnology, its application to biotechnology/biomedicine. Introduction to scaling laws as applied toward living systems and artificial devices; micro- and nanofabrication; sensor and actuator principles; drug delivery, implantable systems, minimally invasive surgery, total analysis systems. (Design units: 1)

BME146 Miniaturization in Biotechnology and Biological Science (4). Introduction of BIOMEMS to engineering and science students. Study of various sensing technique fundamentals. Introduction to various biosensors. Introduction to biological principles using examples; nanomachining and biomimetics. (Design units: 1)

BME147 Microfluidics and Lab-on-a-Chip (4). Essential concepts of fluid transport at the micro and nano scales. Design, fabrication, and operation principles of microfluidic devices for bioassays. Applications discussed include health monitoring, cell-based assays, genetic analysis, drug discovery, drug delivery, molecular diagnostics and biodetection. Prerequisites: BME111 and EECS179, or consent of instructor. (Design units: 1)

BME148 Microimplants (4). Essential concepts of biomedical implants at the micro scale. Design, fabrication, and applications of several microimplantable devices including cochlear, retinal, neural, and muscular implants. Prerequisites: BME111 and EECS179, or consent of instructor. Concurrent with BME248. (Design units: 1)

BME150 Biotransport Phenomena (4). Fundamentals of heat and mass transfer; similarities in the respective rate equations. Emphasis on practical application of fundamental principles. Prerequisite: Mathematics 3D or equivalent. BME150 and CBEMS125C may not both be taken for credit. (Design units: 1)

BME160 Tissue Engineering (4) S. Quantitative analysis of cell and tissue functions. Emerging developments in stem cell technology, biodegradable scaffolds, growth factors, and others important in developing clinical products. Applications to bioengineering design. Prerequisites: BME50A-B, BME121. (Design units: 2)

BME170 Biomedical Engineering Laboratory (4) S. Introduction to measurement and analysis of biological systems using engineering tools and techniques. Laboratory experiments involve living systems with emphasis on biophotonics, BIOMEMS, and physiological systems. Labs include Spectroscopy, BIOMEMS Fabrication and Characterization, Priniciples of the Pulse Oximeter, and Neuroengineering. Prerequisites: BME111, BME120, BME121, BME130, BME140. (Design units: 1)

BME180A-B-C Biomedical Engineering Design (3-3-3) F, W, S. Design strategies, techniques, tools, and protocols commonly encountered in biomedical engineering; clinical experience at the UCI Medical Center and Beckman Laser Institute; industrial design experience in group projects with local biomedical companies; ethics, economic analysis, marketing, and FDA product approval. Prerequisites: BME111, BME120, BME121, BME140. Open only to senior BME majors. In-progress grading. BME180A-B-C must be taken in the same academic year. (Design units: 3-3-3)

BME195 Special Topics in Biomedical Engineering (1 to 4). Prerequisites vary. May be repeated for credit. (Design units: varies)

BME197 Seminars in Biomedical Engineering (1) F. Presentation of advanced topics and reports of current research efforts in Biomedical Engineering. Prerequisite: senior standing. Concurrent with BME298. (Design units: varies)

BME199 Individual Study (1 to 4). Independent research conducted in the laboratory of a Biomedical Engineering core faculty member. A formal written report of the research conducted is required at the conclusion of the quarter. Prerequisites: Biological Sciences 194S and consent of instructor. May be repeated for credit. (Design units: varies)

GRADUATE

BME210 Cell and Tissue Engineering (4). A biochemical, biophysical, and molecular view of cell biology. Topics include the biochemistry and biophysical properties of cells, the extracellular matrix, biological signal transduction, and principles of engineering new tissues.

BME213 Systems Cell and Developmental Biology (4). Introduces concepts needed to understand cell and developmental biology at the systems level, i.e., how the parts (molecules) work together to create a complex output. Emphasis on using mathematical/computational modeling to expand/modify insights provided by intuition. Same as Developmental and Cell Biology 232.

BME220 Quantitative Physiology: Sensory Motor Systems (4). A quantitative and systems approach to understanding physiological systems. Systems covered include the nervous and musculoskeletal systems. Concurrent with BME120.

BME221 Quantitative Physiology: Organ Transport Systems (4). A quantitative and systems approach to understanding physiological systems. Systems covered include the cardiopulmonary, circulatory, and renal systems. Same as CBEMS204. Concurrent with BME121 and CBEMS104.

BME230A Applied Engineering Mathematics I (4). Analytical techniques applied to engineering problems in transport phenomena, process dynamics and control, and thermodynamics.

BME230B Applied Engineering Mathematics II (4). Advanced engineering mathematics for biomedical engineering. Focuses on biomedical system identification. Includes fundamental techniques of model building and testing such as formulation, solution of governing equations (emphasis on basic numerical techniques), sensitivity theory, identifiability theory, and uncertainty analysis.

BME233 Dynamic Systems in Biology and Medicine (4). Introduces elements of system theory and application of these principles to analyze biomedical, chemical, social, and engineering systems. Students use analytical and computational tools to model and analyze various dynamic systems such as population dynamics, Lotka-Volterra equation, and others.

BME236 Engineering Optics for Medical Applications (4). Fundamentals of optical systems design, integration, and analysis used in biomedical optics. Design components: light sources, lenses, mirrors, dispersion elements, optical fibers, detectors. Systems integration: microscopy, radiometry, interferometry. Optical system analysis: resolution, modulation transfer function, deconvolution, interference, tissue optics, noise. Prerequisites: BME130, BME135; EECS180 or consent of instructor. Concurrent with BME136.

BME240 Introduction to Clinical Medicine for Biomedical Engineering (3). An introduction to clinical medicine for graduate students in biomedical engineering. Divided between lectures focused on applications of advanced technology to clinical problems and a series of four rotations through the operating room, ICU, interventional radiology/imaging, and endoscopy. Formerly Engineering 240.

BME248 Microimplants (4). Essential concepts of biomedical implants at the micro scale. Design, fabrication, and applications of several microimplantable devices including cochlear, retinal, neural, and muscular implants. Prerequisites: BME111 and EECS179, or consent of instructor. Concurrent with BME148.

BME261 Biomedical Microdevices I (3). In-depth review of microfabricated devices designed for biological and medical applications. Studies of the design, implementation, manufacturing, and marketing of commercial and research bio-MEMS devices. Formerly BME261A.

BME262 Microfluidics (3). An advanced course on microfluidics research and its application in Biomedical Engineering. Offers in-depth perspective on different fabrication methods and different microfluidic devices that are used in Biomedical Engineering. The principles of microfabrication, surface treatment, device design, and application are covered. Prerequisites: advanced courses in mathematics, physics, and chemistry.

BME263 Microsystem Technologies for Biomolecular Assays (3). Introduction to state-of-the-art micro Total Analysis Systems (mTAS) for biomolecular assays, device design principles for microscale sample preparation, flow transport, biomolecular manipulation/separation/detection, technologies for integrating these devices into microsystems. Applications include clinical medicine, health monitoring, biotechnology, biodetection.

BME295 Special Topics in Biomedical Engineering (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topics vary.

BME296 Master of Science Thesis Research (1 to 12). Individual research or investigation conducted in the pursuit of preparing and completing the thesis required for the M.S. in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

BME297 Doctor of Philosophy Dissertation Research (1 to 12). Individual research or investigation conducted in the pursuit of preparing and completing the dissertation required for the Ph.D. in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

BME298 Seminars in Biomedical Engineering (1) F, W, S. Presentation of advanced topics and reports of current research efforts in biomedical engineering. Designed for graduate students in the biomedical engineering program. Satisfactory/Unsatisfactory only. May be repeated for credit. Concurrent with BME197.

BME299 Individual Research (1 to 12). Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF CHEMICAL ENGINEERING AND MATERIALS SCIENCE

916F Engineering Tower; (949) 824-3887
Albert Yee, **Department Chair**

Faculty

Nancy A. Da Silva: Molecular biotechnology, metabolic engineering, environmental biotechnology

James C. Earthman: Fatigue behavior and cyclic damage, automated materials testing and diagnostics, high-temperature fracture, biomaterials, green materials

Stanley B. Grant: Environmental engineering, inland and coastal water quality, coagulation and filtration of colloidal contaminants, environmental microbiology

Martha L. Mecartney: Grain boundary engineering of ceramics, superplastic ceramics, solid oxide fuel cell materials, ceramics for nuclear waste storage

Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between properties of materials and their microstructure, mechanical behavior at the nanoscale

Ali Mohraz: Guided and self assembly of colloids, soft matter physics, microstructured materials synthesis for energy and biomimetic application, colloids for environmental remediation

Daniel R. Mumm: Enabling materials for energy systems and propulsion (solid oxide fuel cells, thermal barrier coatings), interface mechanics, materials behavior at high temperature, lightweight/multi-functional structures, nanostructured materials, electron microscopy and microanalysis

Hung D. Nguyen: Thermodynamic computer simulations, nanoscale self-assembly, virus assembly, protein folding/aggregation

Mikael Nilsson: Advanced nuclear fuel cycles, actinide chemistry, liquid-liquid extraction, process development, radiolysis, detection and detectors for online process control

Regina Ragan: Self-assembly of hybrid organic/inorganic nanostructures for nanoelectronic and sensing applications; correlating electron transport and optical properties with atomic and molecular structure

Frank G. Shi: Materials packaging/manufacturing technologies for optoelectronic devices (LEDs, solar cells, sensors, etc.); polymer nanocomposites; die attach adhesives and electrical/thermal conductive pastes; silicone and epoxy encapsulants; luminescent and phosphor materials; optical glass

Vasan Venugopalan: Application of laser radiation for medical diagnostics, therapeutics and biotechnology; laser-induced thermal, mechanical, and radiative transport processes

Szu-Wen Wang: Biomolecular engineering, interfacial engineering, nanostructured biomaterials, drug delivery

Albert Yee: Nanofabrication of soft materials, physics of polymer thin films, nanomechanical properties of polymers, ultra-low-k dielectrics, fracture and toughening of polymer nanocomposites

Affiliated Faculty

James P. Brody: Bioinformatics, micro-nanoscale systems

Zhongping Chen: Biomedical optics, optical coherence tomography, bioMEMS, and biomedical devices

William J. Cooper: Environmental chemistry, advanced oxidation processes for water treatment, aquatic photochemistry of carbon cycling

Steven C. George: Physiological and multi-scale integrative modeling, gas exchange, computational methods, tissue engineering

Zhibin Guan: Materials, nanoscience, organic and polymer chemistry, and chemical biology

G. Wesley Hatfield: Molecular mechanisms of biological control systems

Michelle Khine: Development of novel nano- and micro-fabrication technologies and systems for single cell analysis, stem cell research, and in-vitro diagnostics

Young Jik Kwon: Gene therapy, drug delivery, cancer-targeted therapeutics, stem cell bioreactors, biomaterials, cell and tissue engineering, mathematical modeling

Matthew Law: Analytical, inorganic, materials, nanoscience, physical and polymer chemistry, and chemical physics

Guann-Pyng Li: High-speed semiconductor technology, optoelectronic devices, integrated circuit fabrication and testing

John S. Lowengrub: Mathematical materials science, mathematical fluid dynamics, mathematical biology, computational mathematics, cancer modeling, nanomaterials, quantum dots, complex fluids

Marc J. Madou: Fundamental aspects of micro/nano-electro-mechanical systems (MEMS/NEMS), biosensors, nanofluidics, biomimetics

Ayman Mosallam: Advanced composites and hybrid systems, seismic repair and rehabilitation of structures, blast mitigation and diagnostic/prognostic techniques for infrastructure security

Peter M. Rentzepis: Physical chemistry and picosecond spectroscopy

Diego Rosso: Environmental process engineering, mass transfer, wastewater treatment, carbon- and energy-footprint analysis

Kenneth J. Shea: Organic, polymer, and analytical chemistry

Lizhi Sun: Mechanics and materials, composites, micro- and nano-mechanics, elastography xdx

Lorenzo Valdevit: Multifunctional sandwich structures, thermal protection systems, morphing structures, active materials, MEMS, electronic packaging, cell mechanics

H. Kumar Wickramasinghe: Nanoscale measurements and characterization, scanning probe microscopy, storage technology, nano-bio measurement technology

Affiliated faculty are from The Henry Samueli School of Engineering, the School of Medicine, and the School of Physical Sciences.

The Department of Chemical Engineering and Materials Science offers the B.S. degree in Chemical Engineering, the B.S. degree in Materials Science Engineering, the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering, and the M.S. and Ph.D. degrees in Materials Science and Engineering.

Undergraduate Major in Chemical Engineering

Program Educational Objectives: Graduates of the program will (1) demonstrate a broad knowledge in the field of chemical engineering; (2) demonstrate critical reasoning and the requisite quantitative skills in seeking solutions to chemical engineering problems; (3) demonstrate skills for effective communication and teamwork; (4) effectively lead chemical engineering projects in industry, government, or academia; (5) exhibit a commitment to lifelong learning. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

Chemical Engineering uses knowledge of chemistry, mathematics, physics, biology, and humanities to solve societal problems in areas such as energy, health, the environment, food, clothing, shelter, and materials and serves a variety of processing industries whose vast array of products include chemicals, petroleum products, plastics, pharmaceuticals, foods, textiles, fuels, consumer products, and electronic and cryogenic materials. Chemical engineers also serve society in improving the environment by reducing and eliminating pollution.

The undergraduate curriculum in Chemical Engineering builds on basic courses in chemical engineering, other branches of engineering, and electives which provide a strong background in humanities and human behavior. Elective programs developed by the student with a faculty advisor may include such areas as applied chemistry, biochemical engineering, chemical reaction engineering, chemical processing, environmental engineering, materials science, process control systems engineering, and biomedical engineering.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of general chemistry (with laboratory), and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN CHEMICAL ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E; Chemistry 1A-B-C, 1LB-LC; 51A-B-C, 51LA-LB or H52A-B-C, H52LA-LB, 130B-C or 131A-B; Physics 7B/7LB or Physics 7C/7LC; and Physics 7D and 7LD.

Engineering Topics Courses: Students must complete a minimum of 18 units of engineering design. Engineering MAE10 or EECS10, ENGR54, CBEMS45A-B-C, CBEMS110, CBEMS125A-B-C, CBEMS130, CBEMS135, CBEMS140A-B, and CBEMS149A-B. Students select, with the approval of a faculty advisor, any additional engineering topics courses needed to satisfy school and department requirements.

Technical Elective Courses: Students select, with the approval of a faculty advisor, a minimum of 22 units of technical electives. Students may select an area of specialization and complete the associated requirements, as shown below.

(The nominal Chemical Engineering program will require 192 units of courses to satisfy all university and major requirements. Students typically need at least 17 units of engineering topics from technical electives to meet school requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary.)

Engineering Professional Topics Course: ENGR190W.

Specialization in Biochemical Engineering: requires CBEMS112 or CBEMS134 and a minimum of 8 units from CBEMS124, CBEMS132, CBEMS199 or H199 (up to 4 units), CEE166, Biological Sciences 98, Biological Sciences 99, or Biological Sciences M128.

Specialization in Environmental Engineering: requires one course from CBEMS116, CBEMS199 or H199 (at least 3 units), CEE161. Also requires a minimum of two courses from CEE162, CEE163, CEE168, CEE171, CEE172, MAE110, MAE115, MAE164.

Specialization in Materials Science: requires a minimum of 12 units from ENGR150 (requires ENGR30, not included in total), CBEMS154, CBEMS155, CBEMS157, CBEMS158, CBEMS163, CBEMS174, CBEMS175, CBEMS191, CBEMS199 or H199 (up to 4 units), MAE155.

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Chemical Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their faculty advisor. Chemical Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Chemical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Chemistry 1A	Physics 7B/7LB	Physics 7D, 7LD
EECS10 or MAE10	or Physics 7C/7LC	Chemistry 1C, 1LC
General Education	Chemistry 1B, 1LB	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Chemistry 51A, 51LA	Chemistry 51B, 51LB	Chemistry 51C
CBEMS45A	CBEMS45B	CBEMS45C
General Education	ENGR54	General Education
Junior		
CBEMS110	Chemistry 130B	Chemistry 130C
CBEMS125A	CBEMS125B	CBEMS125C
Technical Elective	CBEMS130	Technical Elective
General Education	General Education	General Education
Senior		
CBEMS135	CBEMS140B	CBEMS149B
CBEMS140A	CBEMS149A	Technical Elective
ENGR190W	Technical Elective	General Education
Technical Elective	General Education	General Education

Undergraduate Major in Materials Science Engineering

During the first several years following graduation, the graduates of the Materials Science and Engineering undergraduate program are expected to reach these objectives: (1) utilize a solid background and broad knowledge in the application of the four primary elements of Materials Science and Engineering *(structure, properties, processing, and performance)* to engineered systems; (2) apply, whenever appropriate, design concepts and constraints that relate to materials (electronic, atomistic, molecular, microstructural, mesoscopic, macroscopic) as well as the design of engineering processes and systems (safety, economic, manufacturability environmental, ethical, and social); (3) show a sense of community, ethical responsibility, and professionalism in handling duties and performing tasks; (4) demonstrate independence and critical thinking in seeking optimum solutions for problems related to materials selections, and design; (5) communicate effectively with others (orally, in writing, and by listening); (6) work efficiently as a team player to solve open-ended problems that deal with materials selections and designs; (7) exhibit a commitment to continue the process of education and self-learning not only in the field of Materials Science and Engineering but also in other related fields.

Since the beginning of history, materials have played a crucial role in the growth, prosperity, security, and quality of human life. In fact, materials have been so intimately related to the emergence of human culture and civilization that anthropologists and historians have identified early cultures by the name of the significant materials dominating those cultures. These include the stone, bronze, and iron ages of the past. At the present time, the scope of materials science and engineering has become very diverse; it is no longer confined to topics related to metals and alloys but includes those relevant to ceramics, composites, polymers, biomaterials, nanostructures, intelligent materials, and electronic devices. In addition, present activities in materials science and engineering cover not only areas whose utility can be identified today, but also areas whose utility may be unforeseen. The services of materials scientists and engineers are required in a variety of engineering operations dealing, for example, with emerging energy systems, design of semiconductors and optoelectronic and nano devices, development of new technologies based on composites and high-temperature superconductivity, biomedical products, performance (e.g., quality, reliability, safety, energy efficiency) in automobile and aircraft components, improvement in nondestructive testing techniques, corrosion behavior in refineries, radiation damage in nuclear power plants, and fabrication of advanced materials.

The undergraduate major in Material Science Engineering (MSE) provides students with a thorough knowledge of basic engineering and scientific principles. The undergraduate curriculum in MSE includes (a) a core of Chemistry, Physics, and Mathematics; (b) basic Engineering courses; (c) Materials and Engineering core; and (d) technical courses in Materials Science, Engineering, and Sciences.

Because of the interdisciplinary nature of MSE and its intimate relations with other Engineering disciplines (Aerospace, Biomedical, Chemical, Civil, Computer, Electrical, Environmental, and Mechanical Engineering), qualified students will be able to satisfy in a straightforward manner the degree requirements of their Engineering major and the MSE major.

ADMISSIONS

High School Students: See page 196.

Transfer Students: Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of general chemistry (with laboratory), and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN MATERIALS SCIENCE ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses:

Core Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E; Chemistry 1A-B-C and 1LE; and Physics 7B/7LB or Physics 7C/7LC; Physics 7D-E and 7LD.

Basic Engineering or Science Elective Courses: Students must complete one course from: Biology 93, Chemistry 51A, Physics 51A, Mathematics 7/Statistics 7, BME50A, CEE20, EECS70B, MAE52, MAE80 or CEE80.

Engineering Topics Courses: Students must complete a minimum of 22 units of engineering design.

Core Courses: Engineering MAE10, MAE30/ENGR30 (or CEE30), CBEMS45B-C or MAE91, CBEMS50L, CBEMS125A or MAE130A, CBEMS125B or MAE120, CBEMS155, CBEMS155L, CBEMS160, CBEMS164, CBEMS165, CBEMS169, CBEMS175, CBEMS189A-B-C, CBEMS190A-B-C, ENGR54, ENGR150, MAE150L, EECS70A.

Engineering Electives: Students must complete a minimum of 19 units from BME50A, BME110A-B, BME111, BME120, CBEMS110, CBEMS130, CBEMS154, CBEMS157, CBEMS158, CBEMS163, CBEMS174, CBEMS191, CBEMS199, EECS70B, EECS170LA, EECS170B, EECS174, EECS176, EECS180, MAE106, MAE145, MAE147, MAE151, MAE152, MAE155, MAE157, MAE165, or MAE170. Students select, with the approval of a faculty advisor, any additional engineering topics courses needed to satisfy school and department requirements.

Engineering Professional Topics Course: ENGR190W.

(The nominal Materials Science Engineering program will require 187 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary. Dual engineering majors are reminded that they are required to satisfy all requirements of both majors individually. Students should not assume that courses for one, such as senior design, will satisfy the requirements of the other, without prior approval.)

Students interested in Materials Science Engineering are advised to take CBEMS5. Students majoring in MSE may elect, with approval of their faculty advisor, to use available engineering electives to complete one of the following specializations.

Specialization in Biomaterials: Requires a minimum of 14 units from CBEMS154, CBEMS199 or H199, BME50A, BME110A-B, BME111, BME120.

Specialization in Electronics Processing and Materials: Requires a minimum of 14 units from CBEMS174, CBEMS199 or H199 (up to 3 units), EECS70B, EECS170LA, EECS174, EECS175, and MAE165.

Specialization in Materials and Mechanical Design: Requires a minimum of 14 units from CBEMS199 or H199 (up to 3 units), MAE106, MAE145, MAE147, MAE151, MAE152, MAE155, MAE157, and MAE170.

MINOR IN MATERIALS SCIENCE ENGINEERING

The interdisciplinary field of materials science and engineering has become critical to many emerging areas of advanced technology and their applications. As a result, there are needs and opportunities for engineers and scientists with education and training in materials science and engineering. The goal of the minor in Materials Science Engineering (MSE) is to provide students at UCI with such education and training that will enable them, upon graduation, to not only participate in projects or programs of an interdisciplinary nature but also address challenging societal needs and complex technological advances.

Admission. Admission in the MSE minor requires a minimum 2.5 overall UCI GPA. Students are required to complete all prerequisites for required courses and selected electives. In particular, students need to complete the following courses before applying: Chemistry 1A and Chemistry 1LE; Mathematics 2D, 2J, 2E, 3D; Physics 7B/7LB or Physics 7C/7LC; and Physics 7D, 7LD.

Requirements

The minor in Materials Science Engineering requires a total of seven courses—five required courses and two electives:

Required courses: ENGR54 and CBEMS155; and select three of the following four courses: CBEMS165*, CBEMS169, CBEMS175, and CBEMS199 (contingent upon the availability of research positions in the Materials Science Engineering faculty's research groups).

* For students who plan to pursue a graduate degree in MSE, it is highly recommended that they take CBEMS165 in addition to two of the following courses: CBEMS169, CBEMS175, or CBEMS199.

Electives: Take two from the following courses: ENGR150, CBEMS154, CBEMS157, CBEMS158, CBEMS163, CBEMS174, CBEMS 191, EECS170A-B, BME110A-B, BME111, BME120, MAE151, MAE155, MAE157, MAE165, Chemistry 130A, Chemistry 225, Mathematics 112A (or MAE140), Physics 112A, Physics 133, Physics 135.

PLANNING A PROGRAM OF STUDY

A sample program of study chart for the major in Materials Science Engineering is available in the Undergraduate Student Affairs Office. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their faculty advisor. Materials Science Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

Sample Program of Study — Materials Science Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Chemistry 1A	Chemistry 1B	Physics 7D, 7LD
MAE10	Chemistry 1LE	Chemistry 1C
General Education	Physics 7B/7LB or Physics 7C/7LC	General Education
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E	ENGR54	CBEMS50L
ENGR30	CBEMS45B	CBEMS45C
General Education	Basic Engineering/ Science Elective	General Education
Junior		
ENGR150, MAE150L	CBEMS155	CBEMS160
CBEMS164 includes lab	CBEMS155L	CBEMS169
CBEMS125A	CBEMS125B	CBEMS165
General Education	EECS70A	General Education
	General Education	
Senior		
CBEMS189A	CBEMS189B	CBEMS189C
CBEMS190A	CBEMS190B	CBEMS190C
ENGR190W	CBEMS175	Engineering Elective
Engineering Elective	Engineering Elective	Engineering Elective
Engineering Elective	General Education	General Education

Graduate Study in Chemical and Biochemical Engineering

Chemical engineering uses the knowledge of chemistry, mathematics, physics, biology, and social sciences to solve societal problems such as energy, health, environment, food, clothing, shelter, and transportation. It serves a variety of processing industries whose vast array of products include chemicals, petroleum products, plastics, pharmaceuticals, foods, semiconductors, textiles, fuels, consumer products, and electronic and cryogenic materials. It also serves society to improve the environment by reducing and eliminating pollution. Chemical engineering is an engineering discipline that has its strongest ties with the molecular sciences. This is an important asset since sciences such as chemistry, molecular biology, biomedicine, and solid-state physics are providing the seeds for future technologies. Chemical engineering has a bright future as the discipline which will bridge science with engineering in multidisciplinary environments.

Biochemical Engineering is concerned with the processing of biological materials and processes that use biological agents such as living cells, enzymes, or antibodies. Biochemical Engineering, with integrated knowledge of the principles of biology and chemical engineering, plays a major engineering role in the rapidly developing area of biotechnology. Career opportunities in Biochemical Engineering are available in a variety of industries such as biotechnology, chemical, environmental, food, petrochemical, and pharmaceutical industries.

The principle objectives of the graduate curriculum in Chemical and Biochemical Engineering are to develop and expand students' abilities to solve new and more challenging engineering problems and to promote their skills in independent thinking and learning in preparation for careers in manufacturing, research, or teaching. These objectives are reached through a program of course work and research designed by each student with the assistance, advice, and approval of a primary faculty advisor and a faculty advisory committee. Programs of study leading to the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering are offered.

MASTER OF SCIENCE DEGREE

Two plans are available for the M.S. degree: a thesis option and a comprehensive examination option. Opportunities are available for part-time study toward the M.S. degree.

Students who enter the program with a B.S. degree in chemical engineering must take at least six graduate-level courses (22 units), while students who enter without undergraduate preparation in chemical engineering are required to take three to five additional prerequisite courses (Mathematics 2J and 3D, and Engineering CBEMS45B-C, CBEMS110, CBEMS112, and CBEMS125A). A detailed program of study for each entering student is formulated in consultation with a faculty advisor and must be approved by the graduate advisor.

Plan I: Thesis Option

The thesis option requires completion of 36 units of study (eight of which can be taken for study in conjunction with the thesis research topic); the completion of an original research project; the writing of the thesis describing it; and successful defense of the thesis.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires a minimum of 36 quarter units in approved courses, at least 24 of which must be from graduate courses in the 200 series in Chemical Engineering and Materials Science.

DOCTOR OF PHILOSOPHY DEGREE

The doctoral program is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with an advisory committee which takes into consideration the objectives and preparation of the candidate. The program of study must be approved by the faculty of the School.

There are no specific course requirements, but there are several milestones to be passed: acceptance into a research group by the faculty advisor, successful completion of the Ph.D. preliminary examination, formal advancement to candidacy in the third year (second year for students who entered with a master's degree) by passing the qualifying examination which assesses the candidate's preparation for research and evaluates the proposed original research, successful completion of the research, and presentation and successful defense of the dissertation. There is no foreign language requirement. Ph.D. students have to meet departmental research requirements as a research assistant or equivalent, with or without salary. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of the Graduate Division. For at least the final two years of the doctoral program it is expected that the student will be a full-time resident in the School. The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree. The maximum time permitted is seven years.

Students are required to consult the graduate student handbook for more specific details regarding the course, exam, and unit requirements.

Graduate Study in Materials Science and Engineering

Materials Science and Engineering focuses on the development of new materials and new applications for materials in engineering. Current research programs include nanomaterials, nanostructures, nanoelectronics, nanodevices, nanocharacterization, device/system packaging materials, materials for fuel cells and related alternative energy systems, biocompatible materials, soft materials such as biological materials and polymeric materials, electronic and photonic materials, hybrid materials, interfacial engineering of materials, and multifunctional materials. Faculty with relevant research are affiliated with the Integrated Nanofabrication Research Facility (INRF), the National Fuel Cell Research Center (NFCRC), the California Institute for Telecommunications and Information Technology (Calit2), the Advanced Power and Energy Program (APEP), and the Laboratory for Electron and X-ray Instrumentation (LEXI), among others.

The MSE graduate degree program is hosted by the Department of Chemical Engineering and Materials Science (ChEMS). Faculty who may serve as advisors are listed as affiliated with the ChEMS Department and include faculty with strong materials science and engineering research programs from other departments. The formal degree that is awarded upon successful completion of the program is either the M.S. or Ph.D. in Materials Science and Engineering.

Recommended Background

Given the nature of Materials Science and Engineering as a cross-disciplinary program, students having a background, and suitable training, in Materials, Engineering (Mechanical, Electrical, Civil, Chemical, Aerospace), and the Physical Sciences (Physics, Chemistry, Geology) are encouraged to participate. A student with an insufficient background may be required to take remedial undergraduate courses. Recommended background courses include an introduction to materials, thermodynamics, mechanical behavior, and electrical/optical/magnetic behavior.

Specific Fields of Emphasis

The Materials faculty at UCI have special interest and expertise in all areas of modern materials and technologies, including biomaterials, energy materials, advanced ceramics, polymers and nanocomposite materials, structural and nanostructured metallic materials, micro/nano-device materials, device/system packaging materials, and multifunctional materials.

Required Courses

Students are required to take one course from each area for the M.S. degree and as a basis for the Ph.D. preliminary examination.

Crystal Structure and Defects: MSE200 (Crystalline Solids: Structure, Imperfections, and Properties).

Electrical and Optical Behavior: MSE 205 (Materials Physics).

Mechanical Behavior: one course from MSE251 (Dislocation Theory), MSE256A (Mechanical Behavior of Engineering Materials), MSE256B (Fracture of Engineering Materials), MSE256C (Fatigue of Engineering Materials), MSE261 (High-Temperature Deformation of Engineering Materials).

Thermodynamics and Kinetics: one course from MSE252 (Theory of Diffusion), MSE253 (Kinetic Phenomena in Materials), MSE265 (Phase Transformations), CBEMS240 (Thermodynamics).

Electives

Faculty advisors should be consulted on the selection of elective courses. All graduate courses offered in CBEMS are potential electives. Graduate-level courses offered in other Engineering departments and relevant graduate courses from other schools may also be taken as electives.

MASTER OF SCIENCE DEGREE

The M.S. degree reflects achievement of an advanced level of competence for professional practice of materials science and engineering. Two options are available: a thesis option and a comprehensive examination option.

Plan I: Thesis Option

For the M.S. thesis option, students are required to complete a research study of great depth and originality and obtain approval for a complete program of study. A committee of three full-time faculty members is appointed to guide development of the thesis. A minimum of 36 units is required for the M.S. degree. For the thesis option, at least 21 units must be taken from courses numbered 200–289, among which 12 units are from MSE core courses and at least 9 units are from graduate elective courses approved by the graduate advisor. The remaining 15 units can include (a) 3 units of 298 (Department Seminar), (b) up to 8 units of 296 (M.S. Thesis Research), (c) more 200–289 graduate electives, (d) up to 8 units of upper-division undergraduate courses if these upper-division courses are approved by the MSE graduate advisor. Full-time graduate students must enroll in the departmental seminar each quarter unless exempt by petition.

Plan II: Comprehensive Examination Option

For the comprehensive examination option, students are required to complete 36 units of study and a comprehensive examination. At least 24 units must be taken from courses numbered 200–289, among which 12 units are from MSE core courses and at least 12 units are from graduate elective courses approved by the graduate advisor. The remaining 12 units can include (a) 3 units of 298 (Department Seminar), (b) up to 6 units of 299 (Research Rotations), (c) more 200–289 graduate electives, (d) up to 8 units of upper-division undergraduate courses if these upper-division courses are approved by the MSE graduate advisor. Full-time graduate students must enroll in the departmental seminar each quarter unless exempt by petition.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. degree in Materials Science and Engineering requires a commitment on the part of the student to dedicated study and collaboration with the faculty. Ph.D. students are selected on the basis of outstanding demonstrated potential and scholarship. Applicants must hold the appropriate prerequisite degrees from recognized institutions of high standing. After substantial preparation, Ph.D. candidates work under the supervision of faculty advisors. The process involves extended immersion in a research atmosphere and culminates in the production of original research results presented in a dissertation. Milestones to be passed in the Ph.D. program in order to remain in good standing include the following: acceptance into a research group by the faculty advisor at the end of the student's first year of study; successful completion of the Ph.D. preliminary examination by the end of the second year; preparation for pursuing research and the development of a research proposal culminating in passing the Qualifying Examination by the end of the third year of the Ph.D. program. The Qualifying Examination includes faculty evaluation of a written research dossier and an oral presentation. Students must advance to candidacy in their third year (second year for students who entered with a master's degree).

The core course requirements for the Ph.D. are the same as for the M.S. Students must enroll in the departmental seminar each quarter unless exempt by petition. Ph.D. students must take two additional elective courses beyond the M.S. degree requirements. These courses are to be taken after the first year of graduate work, should be relevant to the Ph.D. dissertation topic, and must be selected in consultation with the research advisor and approved by the MSE graduate advisor. The preliminary examination is based on the four core courses for the M.S. Students who have completed an MSE M.S. degree elsewhere must have a written approval by the graduate advisor to waive required MSE core courses, if they have taken the equivalent courses elsewhere.

Final examination involves the oral presentation and defense of an acceptable dissertation in a seminar attended by students and faculty. The Ph.D. degree is granted upon the recommendation of the Doctoral Committee and the Dean of the Graduate Division. The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years.

Relationship of M.S. and Ph.D. programs. Students applying with the objective of a Ph.D. are admitted to the M.S./Ph.D. program only if they are likely to successfully complete a Ph.D. program. These students do not formally reapply to the Ph.D. program after completing the M.S. degree. Students who apply to the M.S.-only program must formally apply for the Ph.D. program if they desire to continue on for a Ph.D. Financial support is usually reserved for those students who plan to complete the Ph.D. The normative time to complete M.S. and Ph.D. degrees is two and five years, respectively.

Courses in Chemical Engineering and Materials Science

(Schedule of Classes **designation: CBEMS)**

UNDERGRADUATE

NOTE: The undergraduate courses listed below are open only to students in The Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

CHEMICAL ENGINEERING

CBEMS5 Exploring Materials Science and Engineering (1) S. Introduces students to the field of Materials Science and Engineering and how materials engineers analyze problems and design solutions. Topics covered include how materials work, how nature designs materials, and how engineering solutions involving materials impact society.

CBEMS40A Process Engineering Calculations (5) F. Quantitative calculations and applications to process industries using mass and energy balances. Stoichiometric equations, multiple bypasses and recycle streams in process industries, and introduction to the first law of thermodynamics. Prerequisites: Mathematics 2B, Chemistry 1B, and Physics 7A, 7LA. CBEMS40A and CBEMS45A may not both be taken for credit. (Design units: 0)

CBEMS40B Chemical Engineering Thermodynamics (5) S. Basic concepts and use of the thermodynamic functions of free energy, enthalpy, and entropy; properties of pure and mixtures; application of dynamic process and efficiencies. Solution thermodynamics and applications to oxidation reactions. Equilibrium phase diagrams and liquid to solid phase transformations. Prerequisites: CBEMS40A, Mathematics 2J; CEE10 or EECS10 or MAE10. Only one course from CBEMS40B, CBEMS45B, and MAE91 may be taken for credit. (Design units: 1)

CBEMS45A Chemical Processing and Materials Balances (4) F. Introduction to chemical engineering and the industries where chemical engineers play vital roles. Problem-solving skills and techniques. Quantitative calculations and applications using mass and energy balances. Stoichiometric equations, multiple bypasses, and others in process industries. Prerequisites: Mathematics 2B; Chemistry 1B; Physics 7C. CBEMS45A and CBEMS40A may not both be taken for credit. (Design units: 0)

CBEMS45B Chemical Processing and Energy Balances (3) W. Principles of thermodynamics: definitions, basic concepts, and laws; property relationships; construction of thermodynamic charts and tables; energy balances; phase and chemical equilibria; combined mass and energy balances. Prerequisites: CBEMS45A or consent of instructor; Mathematics 2J; EECS10 or MAE10. Only one course from CBEMS45B, CBEMS40B, and MAE91 may be taken for credit. (Design units: 0)

CBEMS45C Chemical Engineering Thermodynamics (4) S. Elements of chemical engineering thermodynamics, including equilibrium and stability; equations of state; generalized correlations of properties of materials; properties of ideal and non-ideal mixtures; thermodynamics of real solutions; ideal and non-ideal phase equilibria; chemical equilibria for ideal and non-ideal solutions. Prerequisite: CBEMS45B with a grade of C- or better, or consent of instructor. CBEMS45C and MAE115 may not both be taken for credit. (Design units: 1)

CBEMS50L Principles of Materials Science and Engineering (2) S. Introduction to the experimental techniques to characterize the properties of engineering materials. Emphasis on understanding the influence of microstructure on elastic, plastic, and fracture behavior. Topics include microstructure characterization, heat treatment, grain size effect, precipitation hardening, and impact loading. Corequisite: ENGR54. (Design units: 0)

CBEMS104 Quantitative Physiology: Organ Transport Systems (4). A quantitative and systems approach to understanding physiological systems. Systems covered include the cardiopulmonary, circulatory, and renal systems. Prerequisite: Mathematics 3D or equivalent, or consent of instructor. Same as BME121. Concurrent with CBEMS204 and BME221. (Design units: 1)

CBEMS110 Reaction Kinetics and Reactor Design (4) F. Introduction to quantitative analysis of chemical reactions and chemical reactor design. Reactor operations including batch, continuous stirred tank, and tubular reactor. Homogeneous and heterogeneous reactions. Prerequisites: Mathematics 3D; Chemistry 1C; CBEMS40B or CBEMS45B-C. (Design units: 2)

CBEMS112 Introduction to Biochemical Engineering (3). Application of engineering principles to biochemical processes. Topics include: microbial pathways, energetics and control systems, enzyme and microbial kinetics, and the design and analysis of biological reactors. Prerequisites: Chemistry 1C, Mathematics 3D; and CBEMS110 or consent of instructor. (Design units: 1)

CBEMS116 Field Practicum in Environmental Engineering (4). Application of concepts from engineering and microbiology to the characterization and analysis of microbial pollution in coastal waters. Topics include public health microbiology, microbial diversity and ecology, molecular diagnostics of waterborne pathogens. Laboratory exercises and a field-scale experiment. Corequisite: CBEMS110 or CEE162. Concurrent with CBEMS216. (Design units: 2)

CBEMS120A Momentum Transfer (4) F. Macroscopic and differential mass balances; macroscopic and differential linear and angular momentum balances, mechanical energy balances; Ideal fluids, Newtonian and non-Newtonian fluids and turbulence. Applications to chemical processes. Prerequisites: CBEMS40A, Mathematics 3D. CBEMS120A and CBEMS125A may not both be taken for credit. (Design units: 1)

CBEMS120B Heat and Mass Transfer (4) W. Macroscopic and differential energy balances. Heat transfer coefficients, convective and radiative heat transfer, applications to equipment design, macroscopic and differential species balances, mass transfer with and without chemical reactions, mass transfer equipment design. Prerequisite: CBEMS120A. CBEMS120B and CBEMS125B may not both be taken for credit. (Design units: 1)

CBEMS124 Transport Phenomena in Living Systems (3). An introduction to transport phenomena in cellular and whole organ systems. Application of transport theory including advection and diffusion to the movement of molecules in biological systems, including the cardiovascular system (heart and microcirculation), and the lung. Prerequisite: CBEMS120A or CBEMS125A or consent of instructor. (Design units: 0)

CBEMS125A Momentum Transfer (4) F. Fluid statics, surface tension, Newton's Law of viscosity, non-Newtonian and complex flows, momentum equations, momentum transport, laminar and turbulent flow, velocity profiles, flow in pipes, flow around objects, design of piping systems, pumps and mixing and other applications to chemical and related industries. Prerequisites: CBEMS45A-B-C; Mathematics 3D. Only one course from CBEMS125A, CBEMS120A, MAE130A, MAEH130A, CEE170, and CEEH170 may be taken for credit. (Design units: 1)

CBEMS125B Heat Transfer (3) W. Principles of conduction, radiation, and convection of heat; phenomenological rate laws, differential and macroscopic energy balances; heat transfer rates, steady state and unsteady state conduction, convection; applications to chemical and related industries. Prerequisite: CBEMS125A with a grade of C- or better. Only one course from CBEMS125B, CBEMS120B, and MAE120 may be taken for credit. (Design units: 1)

CBEMS125C Mass Transfer (3) S. Molecular and continuum approaches to diffusion and convection in fluids and multi-component mixtures; mass transfer rates; steady state, quasi-steady state and transient mass transfer; effect of reactions on mass transfer; convective mass transfer coefficients; simultaneous mass, heat and momentum transfer; applications to chemical and related industries. Prerequisite: CBEMS125B. CBEMS125C and BME150 may not both be taken for credit. (Design units: 1)

CBEMS126 Biomedical Photonics (3). Biophysical principles governing the interaction of laser radiation with biological materials, cells, and tissues. Utilization of these principles in several biomedical therapeutic and diagnostic applications is also covered and discussed in detail. Prerequisites: CBEMS120A-B or CBEMS125A-B-C; or consent of instructor. Concurrent with CBEMS226. (Design units: 0)

CBEMS130 Separation Processes (4) W. Application of equilibria and mass and energy balances for design of separation processes. Use of equilibrium laws for design of distillation, absorption, stripping, and extraction equipment. Design of multicomponent separators. Prerequisite: CBEMS40B or CBEMS45B-C. (Design units: 3)

CBEMS132 Bioseparation Processes (3). Recovery and purification of biologically produced proteins and chemicals. Basic principles and engineering design of various separation processes including chromatography, electrophoresis, extraction, crystallization, and membrane separation. Prerequisites: CBEMS40A-B or CBEMS45A-B-C; CBEMS120A or CBEMS125A. (Design units: 1)

CBEMS134 Introduction to Bioreactor Engineering (3). Unique features of bioreactors. Analyses and design of bioreactors of batch, fed-batch, and continuous flow types. Microbial reactors with and without cell recycles. Bioreactor operations for industrial-important biological products and for biological treatment of wastewater. Prerequisites: CBEMS110. (Design units: 1.5)

CBEMS135 Chemical Process Control (4) F. Dynamic responses and control of chemical process equipment, dynamic modeling of chemical processes, linear systems analysis, analyses and design of feedback loops and advanced control systems. Prerequisites: CBEMS110; CBEMS120B or CBEMS125B-C. (Design units: 1)

CBEMS140A Chemical Engineering Laboratory I (4) F. Experimental study of thermodynamics, fluid mechanics, and heat and mass transfer. Operation and evaluation of process equipment, data analysis. Prerequisites: CBEMS110; CBEMS120B or CBEMS125C; each with a grade of C- or better. (Design units: 1)

CBEMS140B Chemical Engineering Laboratory II (4) W. Continuation of CBEMS140A covering mass transfer operations such as distillation, absorption, extraction. Rate and equilibria studies in simple chemical systems with and without reaction. Study of chemical process. Prerequisites: CBEMS130 with a grade of C- or better; CBEMS135; CBEMS140A. (Design units: 3)

CBEMS145 Chemical Engineering Design (5) S. Application of chemical engineering science techniques to design of chemical processes. Introduction to systematic design of separations and the integration of energy requirement. Integration of process economics and optimization. Consideration of retrofit design, design of nontraditional chemical processes, process safety. Prerequisites: CBEMS110, CBEMS120B or CBEMS125C, CBEMS130. CBEMS145 and CBEMS149A may not both be taken for credit. (Design units: 5)

CBEMS149A Chemical Engineering Design I (3) W. Introduction to process design; flow sheets for chemical processes; synthesis of multicomponent separation sequences and reaction paths; synthesis of heat exchange networks; computer-aided design and simulation of processes and components pacts. Prerequisites: CBEMS110, CBEMS125C, CBEMS130. CBEMS149A and CBEMS145 may not both be taken for credit. (Design units: 2)

CBEMS149B Chemical Engineering Design II (3) S. Application of chemical engineering basics to practical design problems; process economics; process safety; environmental impacts; a major team-design project with progress reports, oral presentation, and a technical report with engineering drawings and economics. Prerequisite: CBEMS149A. (Design units: 3)

CBEMS154 Polymer Science and Engineering (4). An introduction to physical aspects of polymers, including configuration and conformation of polymer chains and characterization techniques; crystallinity visoelasticity, rheology and processing. Prerequisites: Chemistry 1A-B-C and ENGR54, or consent of instructor. (Design units: 1)

CBEMS155 Mechanical Behavior and Design Principles (4) W. Principles governing structure and mechanical behavior of materials, relationship relating microstructure and mechanical response with application to elasticity, plasticity, yielding, necking, creep, and fracture of materials. Introduction to experimental techniques to characterize the properties of materials. Design parameters. Prerequisite: ENGR54. Same as MAE156. (Design units: 2)

CBEMS155L Mechanical Behavior Laboratory (1) W. Introduction to experimental techniques to characterize mechanical properties of materials. Emphasis on the correlations between property and microstructure. Experiments include: plastic stability in tension, effect of grain size and flow stress at low and high temperatures, strain rate effects, impact test, superplasticity, creep of materials. Corequisite: CBEMS155. Prerequisite: ENGR54.

CBEMS157 Composite Materials Design (3). Introduction to fiber-reinforced composites for mechanical applications. Properties of reinforcing fibers. Manufacture of fibers and composites. Micromechanics of fiber composites. Strength criteria and failure modes. Macromechanics in design of laminated composite structures. Prerequisites: ENGR54 and ENGR150. (Design units: 3)

CBEMS158 Ceramic Materials (3). A technical elective for students interested in the materials area. Topics covered include structure and properties of ceramics and design with ceramics. Prerequisite: ENGR54. (Design units: 1)

CBEMS160 Advanced Laboratory in Chemistry and Synthesis of Materials (4) S. Lecture, two hours; laboratory, eight hours. Synthesis and characterization of organic and inorganic materials including polymers and oxides. Techniques include electron and scanning probe microscopy, gel permeation chromatography, x-ray diffraction, porosimetry, and thermal analysis. Prerequisites: ENGR54 or Chemistry 130A-B or 131A-B or Pharmaceutical Sciences 171. Same as Chemistry 156. (Design units: 0).

CBEMS163 Computer Techniques in Experimental Materials Research (3). Principles and practical guidelines of automated materials testing. Computer fundamentals, programming languages, data acquisition and control hardware, interfacint techniques, programming strategies, data analysis, data storage, safeguard procedures. Prerequisite: consent of instructor. Concurrent with MSE263. (Design units: 1)

CBEMS164 X-Ray Diffraction, Electron Microscopy, and Microanalysis (4) F. Material characterization using x-ray diffraction and scanning electron microscopy (SEM). Topics include x-ray diffraction and analysis; SEM imaging and microanalysis. Prerequisite: ENGR54. (Design units: 1)

CBEMS165 Diffusion and Phase Transformations (3) S. Thermodynamics and kinetics of phase transformations, phase diagrams, diffusional and diffusionless transformations. Prerequisites: ENGR54; CBEMS40B or CBEMS45C or MAE91 with a grade of C- or better. (Design units: 0)

CBEMS166 Science of Nanoscale Materials and Devices (3). Covers the properties of nanoscale materials and aspects of current research on next-generation electronic devices. Topics include nanofabrication, characterization of nanostructure materials, and device concepts that take the advantage of quantum mechanical phenomena on the nanoscale. Prerequisites: ENGR54 and Physics 7D. (Design units: 0)

CBEMS169 Electronic and Optical Properties in Materials (4). Covers the electronic, optical, and dielectric properties of crystalline and amorphous materials to provide a foundation of the underlying physical principles governing the properties of existing and emerging electronic and photonic materials. Prerequisites: Physics 7D and 7E, Mathematics 2J and 3D. (Design units: 1)

CBEMS174 Semiconductor Device Packaging (3). Introduction to the semiconductor device packaging and assembly processes. Electrical, thermal, optical, and mechanical aspects of package design and reliability. Special topics on optoelectronics packaging are covered. Prerequisite: CBEMS40A or CBEMS45B or consent of instructor. (Design units: 1)

CBEMS175 Design Failure Investigation (4) W. Survey of the mechanisms by which mechanical devices may fail, including overload, fatigue, corrosion, and wear. Use of fractography and other evidence to interpret failure modes and specify design/manufacturing changes. Students redesign failed parts or structures based on actual parts and/or case histories. Prerequisite: ENGR54. (Design units: 2)

CBEMS189A-B-C Senior Design Project (1-2-2) F, W, S. Group supervised senior design projects that deal with materials selection in engineering design and that involve case studies in ethics, safety, design, failure modes, new products, and patents. Activities conclude with a presentation of the projects. In-Progress grading. Prerequisite: consent of instructor. CBEMS189A-B-C must be taken in the same academic year and concurrently with CBEMS190A-B-C. (Design units: 1-2-2)

CBEMS190A-B-C Materials Selection and Design (2-1-1). F, W, S, Summer. Meaning and phases of design. Design considerations. Safety issues and engineering ethics. Codes and standards. Materials selection in design. Materials selection to meet specific requirements. Statistical considerations. Engineering economics. Seminars on materials selection and design by industry leaders and faculty. Prerequisite: senior standing. CBEMS190A-B-C must be taken in the same academic year and concurrently with CBEMS189A-B-C. (Design units: 3)

CBEMS191 Materials Outreach (3). Demonstration of major concepts in Materials Science and Engineering. Concepts of materials engineering covered include: deformation mechanisms in crystalline solids, effects of heat treatment on mechanical properties, thermal barrier materials, composites design, mechanical behavior of polymers, superconductivity in ceramics. Prerequisite: ENGR54. May be taken for credit four times. (Design units: 1)

CBEMS195 Special Topics in Chemical Engineering and Material Science (1 to 4). Prerequisites vary. May be repeated for credit as topics vary.

CBEMS198 Group Study (1 to 4). Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

CBEMS199 Individual Study (1 to 4). For undergraduate Engineering majors in supervised but independent readings, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be taken up to eight units for letter grade. (Design units: varies)

GRADUATE

CHEMICAL AND BIOCHEMICAL ENGINEERING

CBEMS204 Quantitative Physiology: Organ Transport Systems (4). A quantitative and systems approach to understanding physiological systems. Systems covered include the cardiopulmonary, circulatory, and renal systems. Same as BME221. Concurrent with CBEMS104 and BME121.

CBEMS210 Reaction Engineering (4). Advanced topics in reaction engineering, reactor stability analysis, diffusional effect in heterogeneous catalysis, energy balance, optimization of reactor operation, dispersed in phase reactors. Prerequisite: CBEMS110 or consent of instructor.

CBEMS216 Field Practicum in Environmental Engineering (4). Application of concepts from engineering and microbiology to the characterization and analysis of microbial pollution in coastal waters. Topics include public health microbiology, microbial diversity and ecology, molecular diagnostics of waterborne pathogens. Laboratory exercises and a field-scale experiment. Concurrent with CBEMS116.

CBEMS218 Bioengineering with Recombinant Microorganisms (3). Engineering and biological principles important in recombinant cell technology. Host/vector selection, plasmid propagation, optimization of cloned gene expression, metabolic engineering, protein secretion, experimental techniques, modeling of recombinant cell systems. Prerequisites: CBEMS110, CBEMS112; or consent of instructor.

CBEMS220 Transport Phenomena (4). Heat, mass, and momentum transfer theory from the viewpoint of the basic transport equations. Steady and unsteady state; laminar and turbulent flow; boundary layer theory, mechanics of turbulent transport with specific application to complex chemical engineering situations. Prerequisites: CBEMS120A-B or CBEMS125A-B-C; or consent of instructor.

CBEMS221 Drug Delivery (3). Introduction to design of drug delivery systems. Includes physicochemical and pharmacokinetic considerations in drug formulations, types of therapeutics, routes of administration, biomaterials, and novel drug delivery systems. Prerequisites: undergraduate introductory chemistry and biology.

CBEMS226 Biomedical Photonics (3). Biophysical principles governing the interaction of laser radiation with biological materials, cells, and tissues. Utilization of these principles in several biomedical therapeutic and diagnostic applications is also covered and discussed in detail. Prerequisites: CBEMS120A-B or CBEMS125A-B-C; or consent of instructor. Concurrent with CBEMS126.

CBEMS230 Applied Engineering Mathematics I (4). Analytical techniques applied to engineering problems in transport phenomena, process dynamics and control, and thermodynamics. Prerequisites: CBEMS110; CBEMS120A-B or CBEMS125A-B-C; or consent of instructor.

CBEMS232 Bioseparation Processes (3). Recovery and purification of biologically produced proteins and chemicals. Basic principles and engineering design of various separation processes including chromatography, electrophoresis, extraction, crystallization, and membrane separation. Prerequisite: CBEMS112 or consent of instructor.

CBEMS240 Advanced Engineering Thermodynamics (4). Introduction to modern thermodynamics and applications, with a focus on aspects relevant to chemical and materials engineering. Mathematical tools; equilibrium and stability; microscopic rigorous equations of state; molecular-level thermodynamics of real mixtures; and phase and chemical equilibrium. Prerequisite: CBEMS40B or CBEMS45B-C; or consent of instructor.

CBEMS249 Special Topics in Chemical Engineering and Materials Science (1 to 4). Prerequisites vary. May be repeated for credit as topics vary.

CBEMS295 Seminars in Engineering (1 to 4). Seminars scheduled each year by individual faculty in major field of interest. Satisfactory/Unsatisfactory grading only. Prerequisite: consent of instructor. May be repeated for credit.

CBEMS296 Master of Science Thesis (4 to 12). Individual research or investigation conducted in preparation for the thesis required for the M.S. degree. May be repeated for credit.

CBEMS297 Doctor of Philosophy Dissertation Research (4 to 12). Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. degree. May be repeated for credit.

CBEMS298 Seminars in Engineering (1). Presentation of advanced topics and reports of current research efforts in chemical engineering and materials science. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

CBEMS299 Individual Research (1 to 12). Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

MATERIALS SCIENCE

***(Schedule of Classes* designation: EngrMSE)**

MSE200 Crystalline Solids: Structure, Imperfections, and Properties (3). Principles and concepts underlying the study of advanced materials including alloys, composites, ceramics, semiconductors, polymers, ferroelectrics, and magnetics. Crystal structure and defects, surface and interface properties, thermodynamics and kinetics of phase transformations, and material processing, related to fundamental material properties. Prerequisites: Chemistry 1A-B-C, Physics 7A, 7LA.

MSE205 Materials Physics (3). Covers the electronic, optical, and dielectric properties of crystalline materials to provide a foundation of the underlying physical principles governing the properties of existing and emerging electronic and photonic materials.

MSE251 Dislocation Theory (3). Theory of elasticity and symmetry of crystals, plasticity and slip systems, stress field of dislocation, dislocation reaction, theories of yielding and strengthening, application of reaction-rate kinetics to thermally activated dislocation motion. Prerequisite: ENGR54 or consent of instructor.

MSE252 Theory of Diffusion (3). Solid-state diffusion, analysis of diffusion in solids, thermodynamics of diffusion, application of diffusion theory to phase transformation and deformation problems. Prerequisite: ENGR54 or consent of instructor.

MSE254 Polymer Science and Engineering (3). An introduction to organic and physical chemistry polymers, including synthetic methods, reaction mechanisms; configuration and conformation of polymer chains and characterization techniques; visoelasticity and rheology. Special topics in biopolymers and polymer surfaces. Prerequisite: CBEMS154.

MSE255A Design with Ceramic Materials (3). Dependence of ceramic properties on bonding, crystal structure, defects, and microstructure. Ceramic manufacturing technology. Survey of physical properties. Strength, deformation, and fracture of ceramics. Mechanical design with brittle, environment-sensitive materials exhibiting time-dependent strengths. Prerequisite: ENGR54 or consent of instructor.

MSE256B Fracture of Engineering Materials (3). Fracture mechanics and its application to engineering materials. Elastic properties of cracks, the stress intensity factor, the crack tip plastic zone, the J Integral approach, fracture toughness testing, the crack tip opening displacement, fracture at high temperatures, fatigue crack growth. Prerequisite: CBEMS155 or MAE156; or consent of instructor.

MSE259 Transmission Electron Microscopy (4). The theory and operation of the transmission electron microscope (TEM), including the basic construction, electron optics, electron diffraction and reciprocal space, formation of image and image contrast, interpretation of images and electron diffraction information, microanalysis, and specimen preparation. Includes laboratory component. Prerequisite: MSE200 or consent of instructor.

MSE261 High-Temperature Deformation of Engineering Materials (3). Theoretical and practical aspects of creep and superplasticity in metallic and non-metallic systems are presented. Topics include: creep testing methods, diffusional creep, deformation mechanism maps, and superplasticity in non-metallics. Prerequisites: ENGR54; CBEMS155 or MAE156; or consent of instructor.

MSE263 Computer Techniques in Experimental Materials Research (3). Principles and practical guidelines of automated materials testing. Computer fundamentals, programming languages, data acquisition and control hardware, interfacint techniques, programming strategies, data analysis, data storage, safeguard procedures. Prerequisite: consent of instructor. Concurrent with CBEMS163.

MSE264 Scanning Electron Microscopy (3). The theory and operation of the scanning electron microscope (SEM) and x-ray microanalysis. Topics covered include the basic design and electron optics, electron beam-specimen interactions, image formation and interpretation, x-ray spectrometry, and other related topics and techniques. Includes laboratory. Prerequisite: MSE200 or consent of instructor.

MSE265 Phase Transformations (3). Advanced thermodynamics and kinetics of phase transformations and phase transitions. Prerequisite: CBEMS165 or CBEMS 240 or equivalent.

MSE267 Environmentally Sustainable Manufacturing (3). Multidisciplinary case study approach to environmentally sustainable manufacturing with a focus on electronic products. Engineering, economic, public policy, and industrial ecology aspects. Design, manufacture, policy, and environmental impact reviewed as a function of the entire life-cycle of the materials from extraction through disposal or recycling. Prerequisite: graduate standing.

MSE268 Principles of Coatings, Thin Films, and Multi-layers (3). Principles and concepts underlying the engineering of coating systems, thin films, and multi-layers. Microstructure control, processing approaches, mechanical behavior and thermomechanical characteristics and characterization. Interfacial stability, cracking, delamination, and thermal stress issues. Control of functional properties. Prerequisite: ENGR54.

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

E4130 Engineering Gateway; (949) 824-5333
Masanobu Shinozuka, **Department Chair**

Faculty

Alfredo H.-S. Ang *(Emeritus)*: Structural and earthquake engineering, risk and reliability engineering

Rafael L. Bras: Hydrology, eco-hydrology, hydroclimatology, hydrometeorology, land-atmosphere interactions, fluvial geomorphology, land surface evolution, remote sensing

William J. Cooper: Environmental chemistry, advanced oxidation processes for water treatment, aquatic photochemistry of carbon cycling

Russell L. Detwiler: Groundwater hydrology, contaminant fate and transport, subsurface process modeling, groundwater/surface-water interaction

Maria Q. Feng: Structural engineering and intelligent control of structural systems

Gary L. Guymon *(Emeritus)*: Water resources, groundwater, modeling uncertainty

Medhat A. Haroun *(Emeritus)*: Numerical and experimental modeling of the seismic behavior of structural systems for the design and retrofit of liquid storage tanks, bridge-supporting elements, and buildings

R. (Jay) Jayakrishnan: Transportation systems analysis

C. Sunny Jiang: Water pollution microbiology, environmental biotechnology, aquatic microbial ecology

Wenlong Jin: Intelligent transportation systems, traffic flow theory, transportation network analysis

Michael G. McNally: Travel behavior, transportation systems analysis

Ayman S. Mosallam: Advanced composites and hybrid systems, seismic repair and rehabilitation of structures, blast mitigation and diagnostic/prognostic techniques for infrastructure security

Betty H. Olson: Molecular applications for optimizing biological processes in wastewater treatment, environmental health, drinking water microbiology
Gerard C. Pardoen *(Emeritus)*: Structural analysis, experimental structural dynamics
Wilfred W. Recker: Transportation systems modeling, traffic control, and urban systems analysis
Stephen G. Ritchie: Transportation engineering, advanced traffic management and control systems, development and application of emerging technologies in transportation
Diego Rosso: Environmental process engineering, mass transfer, wastewater treatment, carbon- and energy-footprint analysis
Brett F. Sanders: Environmental hydrodynamics, computational fluid dynamics, coastal water quality
Jean-Daniel M. Saphores: Transportation economics, planning and policy, environmental and natural resource economics and policy, quantitative methods
Jan Scherfig *(Emeritus)*: Water reclamation, waste treatment processes, environmental engineering
Robin Shepherd *(Emeritus)*: Structural dynamics, earthquake-resistant design
Masanobu Shinozuka: Continuum mechanics, structural dynamics, system reliability, risk assessment, remote sensing and GIS for disaster assessment
Soroosh Sorooshian: Hydrology, hydrometeorology and hydroclimate modeling, remote sensing, water sources management
Lizhi Sun: Micro- and nano-mechanics, composites and nanocomposites, smart materials and structures, multiscale modeling, elastography
Roberto Villaverde *(Emeritus)*: Structural dynamics and earthquake engineering
Jasper A. Vrugt: Surface hydrology and soil physics
Jann N. Yang: System identification and damage detection, structural health monitoring, structural control, earthquake engineering, structural dynamics
Farzin Zareian: Structural engineering, performance-based earthquake engineering, structural reliability, structural control

Affiliated Faculty

James S. Famiglietti: Modeling and remote sensing of global hydrology; global change and water availability; sea level rise
Xiaogang Gao: Hydroclimatology, hydrology, fluid dynamics, engineering mathematics
Kuo-lin Hsu: Remote sensing of precipitation, hydologic systems modeling, stochastic hydrology, water resources systems planning
Bisher Imam: Watershed processes, applications of remote sensing and GIS in hydrology and water resources
Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between properties of materials and their microstructure, mechanical behavior at the nanoscale

Affiliated faculty are from the School of Physical Sciences and The Henry Samueli School of Engineering.

Civil Engineering is described as the art of sustainably harnessing the natural environment to meet human needs. The success of this endeavor is evident all around us. The arid plain which greeted the early settlers in Southern California has been transformed into a thriving regional community largely by the application of civil engineering.

The goal of the Civil Engineering curriculum is to prepare graduates for a career in practice, research, or teaching. At the undergraduate level a common core of fundamental subjects is provided, and students are required to specialize in their senior year. Specializations are offered in General Civil Engineering, Environmental Hydrology and Water Resource Engineering, Structural Engineering, and Transportation Systems Engineering. Concentrations are offered in Computer Applications, Engineering Management, Infrastructure Planning, and Mathematical Methods. Graduate opportunities are in three major thrust areas: structural analysis, design, and reliability; transportation systems engineering; and water resources and environmental engineering.

The career opportunities in civil engineering are varied. Graduates may look forward to long-term careers in major corporations, public bodies, the military, private consulting firms, or to being self-employed in private practice. History has shown a civil engineering education to be a good ground for many administrative and managerial positions.

Environmental Engineering involves designing environmental protection or remediation strategies for multiple resources—water, air, and soil, often with combinations of physical, chemical, and biological treatment methods in the context of a complex regulatory framework.

The goal of the Environmental Engineering curriculum is to prepare graduates with a strong basic science background, particularly in chemistry and biology, and to provide students with a broad exposure to several environmental engineering science disciplines. Courses relating to transport processes, water quality control, air quality control, and process design are included in the core.

Career opportunities in environmental engineering are diverse. Graduates generally find careers related to pollution control and the remediation of air, water, and soil environments.

Undergraduate Major in Civil Engineering

Program Educational Objectives: Graduates of the program will (1) establish a Civil Engineering career in industry, government, or academia and achieve professional licensure as appropriate; (2) demonstrate excellence and innovation in engineering problem solving and design in a global and societal context; (3) commit to lifelong learning and professional development to stay current in technology and contemporary issues; and (4) take on increasing levels of responsibility and leadership in technical and/or managerial roles. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

The curriculum provides the opportunity to obtain a firm foundation in engineering science and to develop the techniques of analysis and design, which are basic for the successful practitioner. Emphasis is placed on developing problem-solving skills.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of chemistry (with laboratory), and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN CIVIL ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E; Chemistry 1A-B and 1LB; Physics 7B/7LB or Physics 7C/7LC; Physics 7D and 7LD; and CEE11.

Engineering Science Elective: Students must complete one course from the following: Chemistry 1C and 1LC, Physics 7E, Earth System Science 25, EECS70A, ENGR54, or MAE91.

Additional mathematics and basic science course work may be required depending on the student's applied program.

Engineering Topics Courses: Students must complete a minimum of 24 units of engineering design. Engineering EECS10 or EECS12; CEE20; CEE30; CEE80 or MAE80; CEE81A; CEE81B; CEE110; CEE111; CEE121; CEE130; CEE130L; CEE150; CEE150L; CEE151A; CEE151C; CEE160; CEE170 or MAE130A; CEE171; CEE181A-B-C.

Engineering Design Elective: Students must complete one course from the following: CEE122, CEE123, CEE155 or CEE172. Students completing the specialization in Structural Engineering must take CEE155. *Engineering Design Elective* cannot be counted toward the course requirement for a specialization and/or concentration.

Engineering Professional Topics Courses: Economics 20A-B and either CEE60 or Environmental Analysis and Design E8.

Technical Electives: Students must select one of the areas of specialization or concentration and complete the associated requirements, as shown below. Students select, with the approval of a faculty advisor, any additional engineering topics courses needed to satisfy school and departmental requirements.

(The nominal Civil Engineering program will require 186 units of courses depending on specialization or concentration to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary.)

Specialization in General Civil Engineering: Requires one course each from four of the following five options: (1) CEE122 or CEE123; (2) CEE152, CEE153, CEE155, or CEE156; (3) CEE162 or CEE168; (4) CEE172, CEE176, or CEE178; or (5) CEE55 or courses from an approved list.

Specialization in Environmental Hydrology and Water Resources: Requires four courses from CEE162, CEE163, CEE172, CEE173, CEE176, CEE178, or courses from an approved list.

Specialization in Structural Engineering: Requires CEE155 for the Engineering Design Elective, CEE153 and three courses from CEE149, CEE151B, CEE152, CEE156, MAE155, and MAE157, or courses from an approved list.

Specialization in Transportation Systems Engineering: Requires CEE122 and CEE123, and two courses from CEE124, CEE125, EECS70A, MAE140, MAE170, MAE171, or courses from an approved list.

The Department does not control the scheduling of most courses associated with the following concentrations. Students considering these options should be aware that some of these courses may not be available on a regular basis.

Concentration in Computer Applications: Requires at least five courses or 20 units selected from ICS 6D or Mathematics 6D, ICS 21, ICS 22, ICS 23, ICS 52, EECS40, and selected ICS, EECS, and other courses from an approved list.

Concentration in Engineering Management: Requires Management 5 and five other courses selected from ENGR190, ENGR193, Management 101, 102, 107, 160, 185, and other courses from an approved list. Prospective students must first be admitted to The Paul Merage School of Business undergraduate minor in Management.

Concentration in Infrastructure Planning: Requires at least six courses selected from CEE123, Planning, Policy, and Design 107, 108, 109, 110, 133, 139, and other courses from an approved list.

Concentration in Mathematical Methods: Requires Mathematics 13 and 140A, and four other courses selected from Mathematics 6D, Mathematics 7/Statistics 7, MAE 140, MAE185 or Mathematics 105A and 105LA, Mathematics 105B and 105LB, 107, 112A-B-C, 118A-B-C, 130B-C, 131A-B-C, and other courses from an approved list.

In addition, students must aggregate a minimum of 24 design units. Design unit values are indicated at the end of each course description. The faculty advisors and the Student Affairs Office can provide necessary guidance for satisfying the design requirements.

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

Sample Program of Study — Civil Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Chemistry 1A	Physics 7B/7LB	Physics 7D, 7LD
EECS10 or EECS12	or Physics 7C/7LC	General Education
General Education	Chemistry 1B, 1LB	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
CEE30	CEE80 or MAE80	CEE11
CEE81A, 81B	Eng. Science Elective	CEE20
General Education	General Education	General Education
Junior		
CEE150, 150L	CEE151A	CEE160
CEE170 or MAE130A	CEE171	CEE110
CEE121	CEE130, 130L	Eng. Design Elective
General Education	General Education	General Education

The following sample plans of study are provided for the senior year only; the first three years are common to all specializations.

Senior-Year Sample Programs of Study — Civil Engineering

FALL	WINTER	SPRING
Senior: General Civil Engineering Specialization		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	Spec. Elective
Spec. Elective	Spec. Elective	Spec. Elective
General Education	General Education	General Education
Senior: Environmental Hydrology and Water Resources Specialization		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	Spec. Elective
Spec. Elective	Spec. Elective	Spec. Elective
General Education	General Education	General Education
Senior: Structural Engineering Specialization		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	Spec. Elective
CEE153	Spec. Elective	Spec. Elective
General Education	General Education	General Education
Senior: Transportation Systems Engineering		
CEE181A	CEE181B	CEE181C
CEE151C	CEE111	CEE123
Spec. Elective	CEE122	Spec. Elective
General Education	General Education	General Education

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

The sample program of study chart shown is typical for the accredited major in Civil Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. (Students who select the Environmental Engineering specialization within the Civil Engineering major should follow the Civil Engineering sample program.) Students must have their programs approved by their faculty advisor. Civil Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Undergraduate Major in Environmental Engineering

Program Educational Objectives: Graduates of the program will (1) establish an Environmental Engineering career in industry, government, or academia and achieve professional licensure as appropriate; (2) demonstrate excellence and innovation in engineering problem solving and design in a global and societal context; (3) commit to lifelong learning and professional development to stay current in technology and contemporary issues; and (4) take on increasing levels of responsibility and leadership in technical and/or managerial roles. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

The curriculum includes a core of mathematics, physics, chemistry, and biology, as well as engineering mechanics and methods courses. Students may select from a variety of environmental engineering courses to fulfill the remaining portion of the program and to focus their environmental engineering training in one or more of the following areas: water supply and resources, waste water management, or atmospheric systems and air pollution control. Design experiences are integrated into environmental engineering courses, and seniors enroll in a capstone design course.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of general chemistry (with laboratory), and one additional approved course for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN ENVIRONMENTAL ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E; Physics 7B/7LB or Physics 7C/7LC; Physics 7D and 7LD; Chemistry 1A-B-C and 1LB-LC, Chemistry 51A and 51LA. With approval of a faculty advisor, students select 4 units of Earth System Science and 4 units of Biological Sciences. Additional mathematics and basic science course work may be required depending on the student applied program.

Engineering Topics Courses: Students must complete a minimum of 19 units of engineering design.

Core Courses: Engineering EECS10 or EECS12 or MAE10; CEE11; CEE20; CEE81A; CEE81B; CEE30; CEE80 or MAE80; MAE91; CEE110; CEE130 and 130L; CEE150 and 150L; CEE170; CEE160; CEE162; CEE181A-B-C.

Engineering Elective Courses: Students must take two courses each from two of the following three groups and one course from the remaining groups.

Water Supply and Resources: CEE171, CEE172, CEE173, CEE176, CEE178, Earth System Science 132.

Environmental Processes: CEE163, CEE167.

Atmospheric Systems and Air Pollution Control: MAE110, MAE115, MAE164, Earth System Science 112.

All additional engineering topics courses needed to satisfy school and major requirements must be approved by the faculty advisor. Environmental Engineering is an inherently interdisciplinary program. Students interested in pursuing a dual degree with Environmental Engineering may be able to substitute appropriate course work for required courses stated above. Please consult with an Engineering academic or faculty advisor.

Engineering Professional Topics Courses: Economics 20A-B and either CEE60 or Environmental Analysis and Design E8.

(The nominal Environmental Engineering program requires 191 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary.)

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Environmental Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Environmental Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Environmental Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
Chemistry 1A	Physics 7B/7LB	Physics 7D, 7LD
EECS10 or EECS12	or Physics 7C/7LC	Chemistry 1C, 1LC
General Education	Chemistry 1B, 1LB	
	General Education	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Chemistry 51A, 51LA	CEE80 or MAE80	CEE11
CEE30	General Education	CEE20
CEE81A, 81B	General Education	MAE91
Junior		
CEE150, 150L	CEE130, 130L	CEE110
CEE170	CEE162	CEE160
Science Elective	Engineering Elective	Science Elective
General Education	General Education	General Education
Senior		
CEE181A	CEE181B	CEE181C
Engineering Elective	Engineering Elective	Engineering Elective
General Education	Engineering Elective	General Education
General Education	General Education	

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

Graduate Study in Civil Engineering

Civil Engineering addresses the technology of constructed environments and, as such, embraces a wide range of intellectual endeavors. The Department of Civil and Environmental Engineering focuses its graduate study and research program on four areas: Structural Engineering, including aspects of soil mechanics, structural dynamics, earthquake engineering, and reliability and risk

assessment; Transportation Systems Engineering, including traffic operations and management, advanced information technology applications, travel behavior, and transportation systems analysis; Hydrology and Water Resources Engineering, including hydrology, water resources, contamination management, and pollution control technologies; and Environmental Processes, including physical, chemical, and biological processes in relation to water and wastewater treatment, water reuse, pollutant fate and transport, waste disposal and the ecology of natural waters as well as global climate change and energy.

The Department offers the M.S. and Ph.D. degrees in Civil Engineering.

At the point of application a student is required to identify a thrust area. Specifically, the four thrust areas that have been identified for the Civil Engineering Graduate program are: Structural Engineering, Transportation Systems Engineering, Hydrology and Water Resources Engineering, and Environmental Processes. Once admitted, an advisor will be assigned according to the thrust area a student has chosen. Financial support through research or teaching assistantships and a variety of fellowships and scholarships is available to qualified students.

Structural Engineering: The Structural Engineering area emphasizes the application of analytical, numerical, and experimental approaches to the investigation of constructed facilities and systems that support or resist various loads. The objective of the program is to prepare graduates for leadership positions in industry and academic institutions by providing an opportunity to learn state-of-the-art methodologies applied to significant structural engineering problems. Specific interests include sensors and structural health monitoring, composites for infrastructure applications, reliability and risk assessment of civil engineering systems, structural control, system identification and damage detection, performance-based earthquake engineering, smart materials and structures, multi-scale mechanistic analysis, and sustainable green materials and infrastructural systems.

Transportation Systems Engineering: Among leading centers for transportation research, the Department of Civil and Environmental Engineering offers a graduate research area that is distinguished by its interdisciplinary approach to the study of current and emerging urban transportation issues and by its unique relationship with the UC Irvine Institute of Transportation Studies. The research area focuses on the planning, design, operation, and management of complex transportation systems. Emphasis is on the development of fundamental knowledge in engineering, systems analysis, modeling, and planning, combined with advanced computational techniques and information technologies, to address transportation problems affecting urban travel and goods movement.

Hydrology and Water Resources Engineering: This area focuses on the distribution and transport of water among and between land, atmosphere, and oceans, the supply of water for municipal, agricultural, and environmental uses, and water-related hazards such as flooding and drought. Mathematical and computational modeling is germane to research activity in this area as well as professional practice, so course work is designed to develop theory-based mathematical modeling skill, on the one hand, as well as computational modeling skill on the other. Course work emphasizes important fundamentals such as mass, energy and momentum conservation principles, applied to hydrologic systems, and also increasingly important remote sensing and information technologies. Interdisciplinary study is an important dimension to hydrology and water resources, particularly in the areas of water quality, ecology, infrastructure systems, technology, and policy. Consequently, students are encouraged to take courses in these areas.

Environmental Processes: This area covers physical, chemical, and biological processes in relation to water and wastewater treatment, water reuse, pollutant fate and transport, waste disposal and the ecology of natural waters. Engineering fundamentals such as transport processes and unit operations are central to this area, along with applied sciences such as advanced oxidation chemistry, microbial biotechnology, and ecology. Another central theme is global climate change and energy, particularly in relation to municipal treatment systems. The recommended course work includes transport processes, water and wastewater treatment processes, molecular tools applied to water systems, applied microbial ecology, environmental chemistry, and carbon footprint analysis.

Students may also pursue M.S. and Ph.D. degrees in Engineering through The Henry Samueli School of Engineering graduate concentration in Environmental Engineering.

MASTER OF SCIENCE DEGREE

The M.S. degree reflects achievement of an advanced level of competence for the professional practice of civil engineering. Two plans are available to those working toward the M.S. degree: a thesis option and a course work option. Opportunities are available for part-time study toward the M.S. degree.

Plan I: Thesis Option

The thesis option requires completion of 36 units of study (eight of which can be taken for study in conjunction with the thesis research topic); the completion of an original research project; the writing of the thesis describing it; and presentation of the thesis research findings in a public seminar. Of the 36 units, a minimum of 20 units must be in nonresearch, graduate-level courses. The remaining units may be earned as graduate-level course work, individual research, or upper-division undergraduate units (maximum six units).

Plan II: Course Work Option

The course work option requires the completion of 36 units of study, at least 30 of which must be in nonresearch graduate-level courses. The remaining six units may be earned as graduate-level course work, individual research, or upper-division undergraduate units.

Concurrent Master's Degree Program with Planning, Policy, and Design

The Department of Civil and Environmental Engineering (CEE) and the Department of Planning, Policy, and Design (PPD) in the School of Social Ecology offer a concurrent degree program that allows students to earn both a master's in Civil Engineering (M.S.) and a master's in Urban and Regional Planning (M.U.R.P.) in two years (instead of more than three years if these degrees were pursued sequentially). The concurrent degree program requires 72 units of study and is organized around two tracks: (1) transportation systems, and (2) environmental hydrology and water resources. The program core comprises 15 graduate courses for the transportation systems track, and 13 graduate and two undergraduate courses for the environmental hydrology and water resources track.

Students choose between a thesis option and a comprehensive examination option. The thesis option requires completion of 72 units of study (eight of which may be taken in conjunction with the thesis research); completion of an original research project and the writing of a thesis to describe it; completion of required core courses; and completion of enough units of approved electives to meet the total requirement of 72 units. The comprehensive examination option also requires completion of 72 units of study as well as a professional report, which represents a substantial piece of planning practice, as the capstone event. These units of study include core courses and enough units of approved electives to meet the total requirement of 72 units, with no redundancy of core

courses in either CEE or PPD. Electives may include as many as eight units of independent study or approved undergraduate courses.

Undergraduates seeking admission to the concurrent master's degree program should have a strong record of course work in disciplines related to civil engineering and urban planning, and they must meet the requirements for admission in both departments. For more information about these requirements, see http://www.eng.uci.edu/cee/grad/requirements, and http://www.seweb.uci.edu/ppd/admissions.uci.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. degree indicates attainment of an original and significant research contribution to the state-of-the-art in the candidate's field, and an ability to communicate advanced engineering concepts. The doctoral program is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with a faculty advisor who takes into consideration the objectives and preparation of the candidate. The program of study must be approved by the faculty advisor and the Graduate Advisor of the Department.

There are no specific course requirements. Within this flexible framework, the School maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Civil Engineering program's guidelines for details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty; early assessment of the student's research potential (this includes a preliminary examination), research preparation, formal advancement to candidacy by passing the qualifying examination in the third year (second year for students who entered with a master's degree), completion of a significant research investigation, and the submission and oral defense of an acceptable dissertation. There is no foreign language requirement. Ph.D. students have to meet departmental research requirements as a research assistant or equivalent, with or without salary. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. For at least the final two years of the doctoral program it is expected that the student will be a full-time resident in the School. The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years.

THE INSTITUTE OF TRANSPORTATION STUDIES

The Institute of Transportation Studies at Irvine (ITS) is part of a multicampus research unit of the University of California. ITS Irvine consists of faculty, staff, and graduate and undergraduate students engaged at the forefront of knowledge in interdisciplinary transportation research and education. Currently, the Institute involves faculty and students from The Henry Samueli School of Engineering, the School of Social Sciences, the School of Social Ecology, The Paul Merage School of Business, and the Donald Bren School of Information and Computer Sciences. Collaborations with colleagues from outside the University are common. The mission of the Institute is to create and disseminate significant new knowledge to help solve society's pressing transportation problems, both in California and globally. It achieves this through cutting-edge activities in research, education, and professional outreach. A characteristic of ITS Irvine transportation research is a systems approach, focusing on the areas of planning, policy, economics (including pricing and finance), operations (including traffic, transit, logistics and freight, and safety), energy and the environment, and information technologies. The Institute has close ties to the University's Transportation Science interdisciplinary graduate degree program. Students choosing to focus their studies in transportation will find strong interdisciplinary opportunities between the Department and ITS. See the Office of Research section of the *Catalogue* for additional information.

THE URBAN WATER RESEARCH CENTER

The Urban Water Research Center focuses on five integrating water issues in urban areas: (1) supply, demand, and distribution; (2) water quality; (3) urban ecology; (4) water reuse; and (5) institutions and public policy. In each of these areas the Center enables the issues to be addressed in an integrated way from the points of view of biology, earth systems, economics, engineering public policy, and public health. The Center is the collaborative effort of the Department of Civil and Environmental Engineering, the Department of Earth System Science, and the School of Social Ecology.

Courses in Civil and Environmental Engineering

***(Schedule of Classes* designation: EngrCEE)**

LOWER-DIVISION

NOTE: The undergraduate courses listed below are open only to students in The Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

CEE11 Methods II: Probability and Statistics (4) S. Modeling and analysis of engineering problems under uncertainty. Engineering applications of probability and statistical concepts and methods. Prerequisites: EECS10, EECS12, MAE10, or ICS 21; Mathematics 2J or 3A. (Design units: 1)

CEE20 Engineering Problem Solving (4) S. Introduction to Matlab and its application for engineering analysis and problem solving involving: roots of nonlinear equations, systems of equations, least-squares fitting of curves to data, and integration of ordinary differential equations. Corequisite: Mathematics 3D. Prerequisites: EECS10, EECS12, MAE10 or ICS 21; Mathematics 2J. CEE20 and ENGR15 may not both be taken for credit. (Design units: 1)

CEE30 Statics (4) F, Summer. Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 7A. Same as ENGR30 and MAE30. (Design units: 0)

CEE55 Land Measurements and Analysis (4). Introduction to surveying and land measurements. Use of the level and transit equipment, legal descriptions, subdivisions, topographic surveys, mapping vertical and horizontal curves. Analysis of surveying field data using manual methods, computer programs, and the COGO software system. Laboratory sessions. (Design units: 0)

CEE60 Contemporary and Emerging Environmental Challenges (4) F. Introduces contemporary and emerging environmental challenges, illustrates links between human behavior, environmental policy and engineering practices, examines policy options in the context of current institutions; and introduces tools and frameworks to reach sound economic; social, and environmental solutions. **(III)** (Design units: 0)

CEE80 Dynamics (4) W, Summer. Introduction to the kinetics and dynamics of particles and rigid bodies. The Newton-Euler, Work/Energy, and Impulse/Momentum methods are explored for ascertaining the dynamics of particles and rigid bodies. An engineering design problem using these fundamental principles is also undertaken. Prerequisites: Mathematics 2D and Physics 7C. Same as ENGR80 and MAE80. (Design units: 0.5)

CEE81A Civil Engineering Practicum I (3) F. Introduction to civil engineering through presentations and designs of structural, environmental, and transportation systems. Introduction to visualization and communication of design concepts. Fundamentals of Computer-Aided Design (CAD) using AutoCad, CAD for geomatics, introduction to Geographic Information Systems (GIS). Laboratory sessions. (Design units: 2)

CEE81B Civil Engineering Practicum II (2) F. Introduction to the state-of-the-art and future areas of the profession, including applications of advanced technology and computers. Presentations on information and control technology, smart materials, structures, transportation and environmental systems. Laboratory sessions. (Design units: 0)

UPPER-DIVISION

CEE110 Methods III: Modeling, Economics, and Management (4) S. Analysis, modeling and management of civil engineering systems. Statistics and system performance studies, probabilistic models and simulation, basic economics and capital investments, project elements and organization, managerial concepts and network technique, project scheduling. Emphasis on real-world examples. Laboratory sessions. Prerequisites: CEE11. (Design units: 1)

CEE111 Methods IV: Systems Analysis and Decision-Making (4) W. Analysis and optimization for decision-making in civil and infrastructural systems. Topics include: linear programming formulations and solution algorithms, network models, and logistical models. Emphasis is on project-level and managerial decision-making and selection from alternative designs. Prerequisite: CEE110. (Design units: 1)

CEE121 Transportation Systems I: Analysis and Design (4) F. Introduction to analysis and design of fundamental transportation system components, basic elements of geometric and pavement design, vehicle flow and elementary traffic, basic foundations of transportation planning and forecasting. Laboratory sessions. Prerequisites: CEE11 and CEE81A. (Design units: 2)

CEE122 Transportation Systems II: Operations and Control (4) W. Introduction to fundamentals of urban traffic engineering, including data collection, analysis, and design. Traffic engineering studies, traffic flow theory, traffic control devices, traffic signals, capacity and level of service analysis of freeways and urban streets. Laboratory sessions. Prerequisites: CEE11, CEE121. (Design units: 2)

CEE123 Transportation Systems III: Planning and Forecasting (4) S. Theoretical foundations of transportation planning, design, and analysis methods. Theory and application of aggregate and disaggregate models for land use development, trip generation, and destination, mode, and route choice. Transportation network analysis. Planning, design, and evaluation of system alternatives. Laboratory sessions. Corequisite: CEE110. Prerequisite: CEE121. (Design units: 2)

CEE124 Transportation Systems IV: Freeway Operations and Control (4) S. Fundamentals of traffic on urban freeways, including data collection, analysis, and design. Traffic engineering studies, traffic flow theory, freeway traffic control devices, capacity and level of service analysis of freeways and highways. Laboratory sessions. Prerequisite: CEE121. (Design units: 2)

CEE125 Transportation and the Environment (4) F. Analysis of the impacts of motor vehicle transportation on the environment. Introduction to life cycle analysis applied to transportation. Basic economic tools for transportation externalities. Transportation planning, urban form, health, and the environment. Transportation sustainability. (Design units: 0)

CEE130 Soil Mechanics (3) W. Mechanics of soils, composition and classification of soils, compaction, compressibility and consolidation, shear strength, seepage, bearing capacity, lateral earth pressure, retaining walls, piles. Prerequisites: CEE150, CEE170. (Design units: 0)

CEE130L Soil Mechanics Laboratory (2) W. Laboratory procedures of soil testing for engineering problems. Corequisite: CEE130. (Design units: 0)

CEE149 Introduction to Earthquake Engineering (4). Plate tectonics. Structural dynamics. Earthquake magnitude, intensity, and frequency. Seismic damage to structures. Earthquake load prediction including response spectra, normal mode, and direct integration techniques. The basis of building code earthquake load requirements for buildings. Prerequisites: CEE11, CEE20, CEE80, CEE151A. (Design units: 2)

CEE150 Mechanics of Materials (4) F, Summer. Stresses and strains, strain-stress diagrams, axial deformations, torsion, bending and shear stresses in beams, shear force and bending moment diagrams, combined stresses, principal stresses, Mohr's circle, deflection of beams, columns. Prerequisite: CEE30. Only one course from CEE150, CEEH150, ENGR150, ENGRH150, and MAE150 may be taken for credit. (Design units: 1)

CEE150L Mechanics of Materials Laboratory (1) F. Experimental methods and fundamentals for mechanics of materials analysis. Corequisite: CEE150. Prerequisite: CEE30. CEE150L and MAE150L may not both be taken for credit. (Design units: 0)

CEEH150 Honors Mechanics of Materials (4) F. Covers the same material as CEE150 but in greater depth. Prerequisite: CEE30 or ENGR30 or MAE30. Only one course from CEEH150, CEE150, ENGRH150, ENGR150, and MAE150 may be taken for credit. (Design units: 1)

CEE151A Structural Analysis (4) W. Fundamentals of structural analysis. Deformation of statically determinate structures. Influence lines. Structural systems. Loads: dead, live, wind, and seismic. Prerequisite: CEE150. (Design units: 0)

CEE151B Structural Timber Design (4) S. Design of timber structures. Beams, columns, beam-columns, roof, and connections. Prerequisite: CEE151A. (Design units: 3)

CEE151C Reinforced Concrete Design (4) F. Ultimate strength design. Design of reinforced concrete beam sections. Design for shear and deflection. Design of columns. Design of isolated and combined footings. Laboratory sessions. Prerequisites: CEE130, CEE151A. (Design units: 3)

CEE152 Computer Methods in Structural Analysis and Design (4). Matrix techniques for indeterminate framed structures. Computer implementation using the stiffness method. Software packages for design of reinforced concrete, steel, and/or timber structures. Prerequisites: CEE151C and CEE153. (Design units: 2)

CEE153 Statically Indeterminate Structures (4). Fundamentals of statically indeterminate structures; strain energy and virtual work; energy theorems; deflections, moment-area methods, conjugate beam, method of virtual work, Castigliano theorem; method of consistent deformations; slope-deflection method; approximate methods; influence lines for indeterminate structures. Prerequisite: CEE151A. (Design units: 0)

CEE155 Structural Steel Design (4). Design in steel of tension members, beams, columns, welded and bolted connections; eccentrically loaded and moment resistant joints; plate girders. Plastic design; load and resistance factor design. Composite construction; introduction to computer-aided design. Laboratory sessions. Prerequisite: CEE151B. (Design units: 4)

CEE156 Foundation Design (4). Applications of soil mechanics principles to the analysis and design of shallow foundations, retaining walls, pile foundations, and braced cuts. Design criteria: bearing capacity, working loads and tolerable settlements, structural integrity of the foundation element. Damage from construction operations. Prerequisites: CEE130, CEE151C. (Design units: 3)

CEE160 Environmental Processes (4). Introduction to environmental processes in air and water, mass balances, and transport phenomena. Fundamentals of water quality engineering including water and wastewater treatment. Prerequisites: Chemistry 1B, CEE170. (Design units: 1)

CEE161 Water Quality and Treatment (4) S. Water and the urban environment. Environment regulations. Water quality parameters. Water use, treatment, and reuse. Introduction to modeling and designing of treatment systems. Extensive use of mass balances for system evaluation. Prerequisites: Chemistry 1A; Engineering CEE11; MAE130A or CEE170. (Design units: 2)

CEE162 Introduction to Environmental Chemistry (4) W. Basic concepts from general, physical, and analytical chemistry as they relate to environmental engineering. Particular emphasis on the fundamentals of equilibrium and kinetics as they apply to acid-base chemistry, gas solubility, and redox reactions. Laboratory sessions. Prerequisite: Chemistry 1A-B. (Design units: 0)

CEE163 Biological Treatment Process Design (4). Design of biological treatment processes. Topics include attached and suspended growth, aeration, anaerobic systems, process control and economics. Design projects included. Prerequisite: CEE161. (Design units: 4)

CEE167 Ecology of Coastal Waters (4) W. Examines the ecological processes of the coastal environment. Investigates the causes of coastal ecosystem degradation and strategies to restore the ecosystem balance or prevent further coastal ecosystem health degradation. Prerequisites: Chemistry 1A-B and Environmental Analysis and Design E8. Concurrent with CEE267.

CEE168 Pollution Prevention and Waste Minimization (3) W. Study of the methods and impacts of selecting alternative technologies, processes, and/or products so as to reduce the sources of pollution and waste. Includes discussion of recycling, environmental regulations, life-cycle assessment, and economic analysis. Prerequisites: Chemistry 1C and Mathematics 3D. (Design units: 2)

CEE170 Introduction to Fluid Mechanics (4) F. Fluid properties; fluid statics; fluids in motion; control volume approach for mass, momentum, and energy conservation; surface resistance; resistance, drag and lift. Corequisite: Mathematics 2E. Prerequisites: Physics 7A or 7C. Only one course from CEE170, CEEH170, CBEMS125A, MAE130A, and MAEH130A may be taken for credit. (Design units: 1)

CEEH170 Honors Introduction to Fluid Mechanics (4) F. Covers the same material as CEE170 but in greater depth. Prerequisites: Physics 7A and Mathematics 3D; CEE80/ENGR80/MAE80. Only one course from CEEH170, CEE170, CBEMS120A, CBEMS125A, MAE130A, and MAEH130A may be taken for credit. (Design units: 0)

CEE171 Water Resources Engineering (4) W. Principles governing the analysis and design of water resource systems including pressurized pipelines, pipe networks, channels, and ground water. Coverage of fluid mass, momentum and energy conservation, flow resistance, and related laboratory measurements in different systems. Prerequisites: CEE20 or MAE10; CEE170 or MAE130A. (Design units: 2)

CEE172 Groundwater Hydrology (4). Topics include conservation of fluid mass, storage properties of porous media, matrix compressibility, boundary conditions, flow nets, well hydraulics, groundwater chemistry, and solute transport. Design projects and computer applications included. Prerequisites: CEE20; CEE170 or MAE130A; or consent of instructor. Concurrent with CEE 272. (Design units: 2)

CEE173 Computer Tools for Watershed Modeling (4). Basic principles of hydrologic modeling are practiced in detail. Concepts of watershed, floodplains delineation, hydrologic impact, design studies, and GIS tools are discussed. Focus on the USACE (HEC) software tools (HEC-HMS, and HEC-RAS) along with their associated GIS interfaces. Prerequisites: CEE176 and CEE170. Concurrent with CEE273.

CEE176 Hydrology (4). Elements of the hydrologic cycle including precipitation, infiltration, evapotranspiration, ground water, and runoff. Unit Hydrograph theory and routing methods. Introduction to precipitation/runoff relationship and watershed modeling. Statistical methods and flood frequency analysis. Prerequisite: CEE170 or MAE130A. Concurrent with CEE276. (Design units: 2)

CEE178 Fluid Mechanics of Open Channels (4). Fundamentals of fluid motion in open channels. Navier-Stokes equations and one-dimensional momentum and energy principles. Topics include rapidly varied flow, flow resistance and turbulence, gradually varied flow, unsteady flow, and computational methods for channel flow modeling. Prerequisites: CEE20 or MAE10; CEE170 or MAE130A. Concurrent with CEE278. (Design units: 1)

CEE181A-B-C Senior Design Practicum (2-2-2) F, W, S. Team designs a land development project including infrastructural, environmental, circulation aspects. Focus on traffic impact studies, design of road layouts, geometry, signals, geotechnical and hydrological analysis, design of structural elements, economic analysis. Oral/written interim and final design reports. Laboratory sessions. In-Progress grading. Corequisites: CEE121 and CEE151C. Prerequisites: CEE81A, CEE81B, CEE110, CEE161. CEE181A-B-C must be taken in the same academic year. (Design units: 1-2-2)

CEE195 Special Topics in Civil and Environmental Engineering (1 to 4). Corequisite and prerequisite: varies. May be repeated for credit as topics vary. (Design units: varies)

CEE198 Group Study (1 to 4). Group study of selected topics in Civil and Environmental Engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

CEE199 Individual Study (1 to 4). For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. May be repeated for credit for a total six units. (Design units: varies)

GRADUATE

CEE220A Travel Demand Analysis I (3) W. Fundamentals of transportation systems analysis. Theoretical aspects of travel demand. Travel behavior. Modeling of performance characteristics and costs of transportation modes. In-depth presentation of travel demand modeling techniques. Development of travel choice models including mode, route, and destination choice. Equilibration. Prerequisite: knowledge of probability and statistics.

CEE220B Travel Demand Analysis II (3) S. Methods of discrete choice analysis and their applications in the modeling of transportation systems. Emphasis on the development of a sound understanding of theoretical aspects of discrete choice modeling that are useful in many applications in travel demand analysis. Prerequisite: CEE220A.

CEE221A Transportation Systems Analysis I (3) F. Introduction to mathematical methods and models to address logistics and urban transportation problems. Techniques include stochastic models, queueing theory, linear programming, and introductory non-linear optimization. Prerequisite: basic knowledge of probability theory.

CEE221B Transportation Systems Analysis II (3) S. Advanced mathematical methods and models to address logistics and urban transportation problems. Topics include network flows, advanced optimization techniques, network models, and heuristic algorithms. Prerequisites: CEE221A; graduate standing or consent of instructor.

CEE222 Transit Systems Planning (3) F. Planning methods for public transportation in urban areas. Technological and operating characteristics of vehicles, facilities, and systems. Short-range planning techniques: data collection and analysis, demand analysis, mode choice, operational strategies, financial analysis. Design of systems to improve performance.

CEE224A Transportation Data Analysis I (3). Statistical analysis of transportation data sources. Analysis of categorical and ordinal data. Regression and advanced multivariate analysis methods such as discriminant analysis, canonical correlation, and factor analysis. Sampling techniques, sample error and bias, survey instrument design. Prerequisites: knowledge of probability and statistics; graduate standing or consent of instructor.

CEE225B Transportation Planning Models II (3) S. Design and application of comprehensive transportation models. Network development, demand modeling, and equilibrium assignment. Model calibration, validation, prediction, and evaluation. Regional modeling, site impact analysis, and circulation studies. Design of transportation alternatives.

CEE226A Traffic Flow Theory I (3) F. Traffic measurement and fundamental speed-density-flow relationships. Kinematic models. Shock waves. Statistical-kinetic theory of traffic. Introductory car-following principles and stability. Gap acceptance. Platoon dispersion. Two-fluid model. Queueing processes. Multi-regime and catastrophe models. Higher-order continuum models. Microscopic and macroscopic simulation. Prerequisites: knowledge of basic probability and statistics; graduate standing or consent of instructor.

CEE226B Traffic Flow Theory II (3). Advanced mathematical analysis of vehicular flow. Detailed treatise on car-following models. Fourier and Laplace analysis of stability problems. Perturbation analysis. Derivation of macroscopic traffic flow relationships from microscopic considerations. Advanced hydrodynamic theory. Prerequisite: CEE226A.

CEE227A Transportation Logistics I: Introduction to Logistics and Supply Chain Management (3) W. Logistics network configuration, inventory management and risk pooling, the value of information, distribution strategies, international supply chain management, coordinated product and supply chain management, customer value and supply chain management, information technology, decision support systems.

CEE228A Urban Transportation Networks I (3) S. Analytical approaches and algorithms to the formulation and solution of the equilibrium assignment problem for transportation networks. Emphasis on user equilibrium (UE), comparison with system optimal, mathematical programming formulation, supply functions, estimation. Estimating origin-destination matrices, network design problems. Prerequisite: CEE220A or equivalent.

CEE229A Traffic Systems Operations and Control I (3) W. Introduction to operation, control, and analysis of arterial and freeway traffic systems. Control concepts, traffic stream principles, detectors, local controllers, system masters, traffic signal and ramp metering timing principles, traffic measurement technologies, traffic delay principles.

CEE229B Traffic Systems Operations and Control II (3) S. Advanced topics related to operation, control, and analysis of arterial and freeway traffic systems. Control concepts, traffic stream principles, detectors, local controllers, system masters, traffic signal and ramp metering timing principles. Prerequisite: CEE229A.

CEE231 Foundation Engineering (3) W. Essentials for design and analysis of structural members that transmit superstructure loads to the ground. Topics include subsurface investigations, excavation, dewatering, bracing, footings, mat foundations, piles and pile foundations, caissons and cofferdams, other special foundations. Prerequisite: CEE156 or equivalent.

CEE242 Advanced Strength of Materials (3) W. Beams on elastic foundations. Combined axial and lateral loads. Curved beams. Unsymmetric bending. Shear center. Stresses and strains. Basic equations for theory of elasticity. Energy principles. Theory of torsion. Combined bending and torsion.

CEE243 Mechanics of Composite Materials (3) S. Stress-strain relationship for orthotropic materials; invariant properties of an orthotropic lamina; biaxial strength theory for an orthotropic lamina; mechanics of materials approach to stiffness; elasticity approach to stiffness; classical lamination theory; strength of laminates; statistical theory of fatigue damage. Prerequisite: consent of instructor.

CEE247 Structural Dynamics (3) F. Vibration of discrete and continuous mass elastic systems. Isolation and transmissibility. Dynamic recording instruments. Introduction to nonlinear theory of vibration. Response of structures to earthquake, traffic, and wind loads. Response spectra concepts. Normal mode analysis. Numerical integration techniques. Prerequisite: CEE80 or consent of instructor.

CEE249 Earthquake Engineering (3) W. Earthquake magnitude, intensity, and frequency. Seismic damage to structures. Earthquake load prediction including response spectra, normal mode, and direct integration techniques. The basis of building code earthquake load requirements for buildings. Seismic response of special structures. Lifeline engineering. Prerequisite: consent of instructor.

CEE250 Finite Element Method in Structural Engineering (3). Finite element concepts in structural engineering including variational formulations, shape functions, elements assembly, convergence, and computer programming. Stiffness of truss, beam, and frame members; two- and three-dimensional solids; plate and shell elements. Static, vibration, stability, and inelastic analyses. Prerequisite: consent of instructor.

CEE254 Advanced Reinforced Concrete Behavior and Design (3) F. Flexural strength of reinforced concrete elements. Flexural ductility of unconfined and confined members with axial loads. Shear and torsional behaviors. Strength of reinforced concrete ductile frames and shear walls. Reinforced concrete detailing. Prerequisite: consent of instructor.

CEE255 Advanced Behavior and Design of Steel Structures (3) F. Advanced principles of structural steel design. Analysis and design of beam-column members, braced and unbraced frames for buildings, and plate girders. Review of seismic design provisions. Design of connections. Prerequisite: CEE 153 or consent of instructor.

CEE258 Earthquake-Resistant Structural Design (3) S. Objectives of seismic design. Cyclic load-distortion characteristics of typical structural elements. Desirable structural form. Ductility and methods of achieving it. Use of energy dissipators. Project involving design of multistory, multibay rigid-jointed plane frame. Prerequisite: consent of instructor.

CEE259 Structural Stability (3) S. Introduction to structural stability emphasizing behavior of simple structural components that illustrate various modes of instability. Euler columns, beam columns, and instability of simple frames. Energy methods. Beam torsion and lateral instability. Elementary matrix methods compatible with finite element models. Prerequisite: CEE150 or MAE150 or equivalent; or consent of instructor.

CEE262 Environmental Chemistry II (4) W. Advanced concepts from physical and organic chemistry as they relate to environmental engineering. Emphasis on equilibrium and kinetics as they apply to redox reactions, coordination, adsorption, gas phase reactions, and ion exchange. Laboratory on GC, GC-MS, and ion chromatography. Prerequisite: CEE162.

CEE263 Advanced Biological Treatment Processes (3) W. Analysis of natural biological processes in the aquatic environment. Design of biological treatment processes with emphasis on suspended growth systems. Aerobic and anaerobic treatment systems, biodegradation of contaminants in the environment. Construction and use of computer models for process design and operation. Prerequisites: CEE161 and CEE162.

CEE264 Carbon Footprint Analysis for Water and Wastewater Systems (4). Mass- and energy-flux balance analysis applied to water and wastewater systems. Case studies include analysis and design of aeration, membrane separations, disinfection, water supply, and water reclamation processes. Prerequisite: CEE263, CEE265, or consent of instructor.

CEE265 Advanced Physical-Chemical Treatment Processes (4) S. Theory and dynamics of physical and chemical separation processes in water and wastewater treatment. Topics include coagulation, sedimentation, filtration, gas transfer, membrane separations, and adsorption. Prerequisites: CEE161 and CEE162.

CEE266 Drinking Water and Wastewater Biotechnology (4). Water and wastewater microbiology. Engineering principles, molecular aspects, and overview of microorganisms of importance to public health. Topics include aerobic and anaerobic wastewater treatment and disinfection of pathogens in water, wastewaters, and biosolids. Prerequisites: Chemistry 51A, CEE161, CEE162; or consent of instructor.

CEE267 Ecology of Coastal Waters (4) W. Examines the ecological processes of the coastal environment. Investigates the causes of coastal ecosystem degradation and strategies to restore the ecosystem balance or prevent further coastal ecosystem health degradation. Prerequisite: Chemistry 1A-B or equivalent; or consent of instructor. Concurrent with CEE167.

CEE268 Pollution Prevention Through Manufacturing, Materials Selection, and Product Design (3) S. Study of manufacturing, materials selection, and product design alternatives that yield less solid, air, and/or water pollutants. Analytical tools, such as life-cycle analysis and economic analysis, that can be used to compare alternatives are discussed. A case study approach is utilized.

CEE271 Flow in Unsaturated Porous Media (3). Fluid flow in the unsaturated zone (zone of aeration) of the subsurface. Soil-water physics, flow in regional groundwater systems, miscible displacement, mathematical modeling techniques. Prerequisite: CEE172 or consent of instructor.

CEE272 Groundwater Hydrology (4). Topics include conservation of fluid mass, storage properties of porous media, matrix compressibility, boundary conditions, flow nets, well hydraulics, groundwater chemistry, and solute transport. Design projects and computer applications included. Prerequisites: CEE20 or equivalent; CEE170 or MAE130A or equivalent; or consent of instructor. Concurrent with CEE172.

CEE273 Computer Tools for Watershed Modeling (4) W. Basic principles of hydrologic modeling are practiced in detail. Concepts of watershed, floodplains delineation, hydrologic impact, design studies, and GIS tools are discussed. Focus on the USACE (HEC) software tools (HEC-HMS) and HEC-RAS) along with their associated GIS interfaces. Concurrent with CEE173.

CEE275 Topics in Coastal Engineering (3) S. Linear wave theory. Wave properties: particle kinematics, energy propagation, shoaling, refraction, reflection, diffraction, and breaking. Wave statistics and spectra. Selected topics from: design of coastal structures; harbor engineering; littoral transport and shoreline morphology; and hydrodynamics of estuaries. Prerequisites: CEE11, CEE171, or consent of instructor.

CEE276 Hydrology (4). Elements of the hydrologic cycle including precipitation, infiltration, evapotranspiration, ground water, and runoff. Unit Hydrograph theory and routing methods. Introduction to precipitation/runoff relationship and watershed modeling. Statistical methods and flood frequency analysis. Discussion section covers advanced topics. Prerequisite: CEE170 or MAE130A or equivalent, or consent of instructor. Concurrent with CEE176.

CEE277 Hydrologic Transport Fundamentals (4) W. Process description, mathematical and numerical modeling of transport processes in surface and ground water. Topics include advection, molecular diffusion, Taylor dispersion, mechanical dispersion in porous media, shear flow dispersion in channels, and turbulent jets and plumes. Prerequisites: CEE20 or MAE10 or equivalent; CEE278 or consent of instructor.

CEE278 Fluid Mechanics of Open Channels (4). Fundamentals of fluid motion in open channels. Navier-Stokes equations and one-dimensional momentum and energy principles. Topics include rapidly varied flow, flow resistance and turbulence, gradually varied flow, unsteady flow, and computational methods for channel flow modeling. Prerequisites: CEE20 or MAE10 or equivalent; CEE170 or MAE130A or equivalent; or consent of instructor. Concurrent with CEE178.

CEE279 Hydrologic Computational Modeling (4). Computational modeling of multi-dimensional flow and scalar transport problems in surface and ground water. Topics include mathematical model formulation, numerical method selection, serial and parallel implementation, model verification and validation. Prerequisites: CEE272, CEE277, and CEE278; or consent of instructor. Formerly CEE279A.

CEE281 Structural Reliability (3). Applications of probability theory to reliability analysis of engineering structures. Theory of structural reliability. Estimation of static random loads. Reliability analysis of structural components and system. Monte Carlo simulation. Prerequisite: CEE11 or equivalent.

CEE283 Mathematical Methods in Engineering Analysis (3) F. Matrices; vector calculus; eigenvalue problems; Fourier analysis; partial differential equations; special functions; numerical analysis; finite difference method.

CEE284 Engineering Decision and Risk Analysis (3) F. Develops applications of statistical decision theory in engineering. Presents the fundamental tools used in engineering decision making and analysis of risk under conditions of uncertainty. All concepts are presented and illustrated thoroughly with engineering problems. Prerequisite: CEE11 or consent of instructor.

CEE285 Reliability of Engineering Systems I (3) W. Develops the basic concepts for the definition and assessment of safety and reliability of engineering systems. Includes probabilistic modeling of engineering problems, assessment of component reliability, systems reliability, and introduction to probability-based design. Prerequisite: CEE11 or consent of instructor.

CEE287 Random Vibrations (3) W. Stationary stochastic processes. Spectral analysis. Stochastic response of linear, single and multi-degrees of freedom systems. Probabilistic approach to dynamic response of structures to random loadings. Prerequisites: CEE11 or equivalent; CEE281 or CEE284; or consent of instructor.

CEE289 Analysis of Hydrologic Systems (3). Application of systems theory in hydrologic, land surface, and biogeochemical modeling. Design, identification, and calibration of conceptual models. Principles of dynamic systems and modeling approaches, theory of linear systems and mathematical concepts of differential calculus, theoretical concepts of parameter estimation and optimization theory. Same as Earth System Science 238.

CEE295 Seminars in Engineering (1 to 12) F, W, S. Seminars scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor. May be repeated for credit.

CEE296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation of the thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

CEE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

CEE298 Special Topics in Civil Engineering (1 to 4) F, W, S. Presentation of advanced topics and special research areas in civil engineering. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

CEE299 Individual Research (1 to 12) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

2213 Engineering Hall; (949) 824-4821
Michael Green, **Department Chair**

Faculty

Nicolaos G. Alexopoulos (*Emeritus*): High-frequency integrated circuit antennas, wireless communication, materials

Animashree Anandkumar: Statistical inference and learning of graphical models, scalable network algorithms

James Arvo: Computer graphics, intelligent user interfaces

Ender Ayanoglu: Communication systems, communication theory, communication networks

Mark Bachman: Integrated microsystems, microfabrication technology, biomedical microdevices, sensor systems, human sensing, human-machine interface

Nader Bagherzadeh: Parallel processing, computer architecture, computer graphics, VLSI design

Neil J. Bershad *(Emeritus):* Communication and information theory, signal processing

Ozdal Boyraz: Silicon photonics and optical communications systems

Peter J. Burke: Nano-electronics, bio-nanotechnology

Filippo Capolino: Optics/electromagnetics in nanostructures and sensors; antennas/microwaves, RF and wireless systems

Pai H. Chou: Hardware/software co-design, embedded systems, wireless sensor systems, medical devices, and real-time systems

Beatriz da Costa: Robotic art, tactical media, biotech initiatives, urban ecologies, surveillance projects, collaborative practice, social change

Rui J. P. de Figueiredo *(Emeritus)*: Machine intelligence and neural and soft computing; applications to signal/image processing and biomedical engineering; applied mathematics

Franco De Flaviis: Microwave systems, wireless communications and electromagnetic circuit simulations

Brian Demsky: Compiler programming, language software engineering and fault tolerance

Rainer Doemer: System-level design, embedded computer systems, design methodologies, specification and modeling languages

Ahmed Eltawil: Design of system and VLSI architectures for broadband wireless communication; implementations and architectures for digital processing

Leonard A. Ferrari *(Emeritus):* Machine vision, signal processing, computer graphics

Daniel D. Gajski: Embedded systems, software/hardware design, design methodologies and tools, science of design

Jean-Luc Gaudiot: Parallel processing, computer architecture, processor architecture

Michael M. Green: Analog/mixed-signal IC design, broadband circuit design, theory of nonlinear circuits

Glenn E. Healey: Machine vision, computer engineering, image processing, computer graphics, intelligent machines

Payam Heydari: Design and analysis of analog, RF, and mixed-signal integrated circuits; analysis of signal integrity and high-frequency effects of on-chip interconnects in high-speed VLSI circuits

Syed A. Jafar: Wireless communication and information theory

Hamid Jafarkhani: Communication theory, coding, wireless networks, multimedia networking

K. H. (Kane) Kim: Real-time object-component-/service-oriented programming and system engineering, ultra-reliable distributed and parallel computing, real-time distributed simulation

Stuart Kleinfelder: First integrated sensor/readout arrays for visual, IR, X-ray, and charged particles

Fadi J. Kurdahi: VLSI system design, design automation of digital systems

Tomas Lang: Numerical processors and multiprocessors, parallel computer systems

Chin C. Lee: Bonding technology, electronic packaging, acoustics, microwaves, semiconductor devices, thermal management

Henry P. Lee: Photonics, fiber-optics and compound semiconductors

Guann-Pyng Li: High-speed semiconductor technology, optoelectronic devices, integrated circuit fabrication and testing

Kwei-Jay Lin: Real-time systems, distributed systems, service-oriented computing

Athina Markopoulou: Networking—reliability and security, multimedia networking, and measurement and control, design and analysis of network protocols and algorithms, Internet reliability and security, multimedia streaming, network measurements and control

Simon Penny: Electronic media art: practice, history, and theory; technologies for embodied interaction; cultural applications of emerging technologies; multi-camera machine vision, immersive environments, robotics and motion control

Phillip C-Y. Sheu: Database systems, interactive multimedia systems

Jack Sklansky *(Emeritus):* Digital radiology, pattern recognition, medical imaging, neural learning, computer engineering

Keyue M. Smedley: Power electronics and analog circuit design

Allen R. Stubberud *(Emeritus):* Control systems, digital signal processing, estimation and optimization

A. Lee Swindlehurst: Signal processing, estimation and detection theory, applications in wireless communications, geo-positioning, radar, sonar, biomedicine

Harry H. Tan *(Emeritus):* Communication and information theory, stochastic processes

Chen S. Tsai: Integrated and fiber optics, devices, and materials, integrated acoustooptics and magnetooptics, integrated microwave magnetics, Ultrasonic Atomization for Nanoparticles Synthesis, silicon photonics

Wei Kang (Kevin) Tsai *(Emeritus)*: Data communication networks, control systems

H. Kumar Wickramasinghe: Nanoscale measurements and characterization, scanning probe microscopy, storage technology, nano-bio measurement technology

Affiliated Faculty

Lubomir Bic: Parallel processing, dataflow systems, database machines
Harut Barsamian: Computer systems, architecture and technology
Zhongping Chen: Biomedical optics, optical coherence tomography, bioMEMS, biomedical devices
Nikil D. Dutt: VLSI design automation tools, design methodologies, design languages, high-level synthesis
Magda S. El Zarki: Computer networking, telecommunications networks, wireless networking
Maria Q. Feng: Structural engineering and intelligent control of structural systems
Michael Franz: Compilers
Michael Goodrich: Computer security, algorithm design, data structures, Internet algorithmics, geometric computing, graphic drawing
Daniel Hirschberg: Analyses of algorithms, concrete complexity, data structures, models of computation
Scott Jordan: Pricing and differentiated services in the Internet, resource allocation in wireless networks, telecommunications policy
Aditi Majumder: Computer graphics
Gopi Meenakshisundaram: Geometry and topology for computer graphics, image-based rendering, object representation, surface reconstruction, collision detection, virtual reality, telepresence
Sharad Mehrotra: Data management
Sabee Molloi: Physics of medical imaging
Mehran Moshfeghi: Video and image processing, distributed systems, Internet computing, medical imaging and information systems
Orhan Nalcioglu: Nuclear magnetic resonance imaging and spectroscopy, digital radiography, computed tomography, medical imaging
Richard D. Nelson: Sensors, microelectronics, photonics, medical imaging, micro-electro-mechanical systems (MEMS)
Zoran Nenadic: Adaptive biomedical signal processing, control algorithms for biomedical devices, brain-machine interfaces, modeling and analysis of biological neural networks
Alexandru Nicolau: Architecture, parallel computation, programming languages and compilers
Peter M. Rentzepis: Physical chemistry, picosecond spectroscopy
Henry Samueli: Digital signal processing, communications systems engineering, CMOS integrated circuit design for applications in high-speed data transmission systems
Issac Scherson: Parallel computing architectures, massively parallel systems, parallel algorithms, interconnection networks, performance evaluation
Carlton H. Scott: Operations research, production management, total quality management, statistics
Andrew Shapiro: Electronic and optoelectronics
Frank G. Shi: Optoelectronic packaging and materials
Andrei M. Shkel: Design and advanced control of micro-electro-mechanical systems (MEMS)
Tatsuya Suda: Computer networks, distributed systems, performance evaluation
William C. Tang: Micro- and nanotechnology for wireless communication and micro biomechanics
Homayoun Yousefi'zadeh: Communications networks

Affiliated faculty are from the Schools of Physical Sciences and Medicine, the Donald Bren School of Information and Computer Sciences, and The Henry Samueli School of Engineering.

Electrical Engineering and Computer Science is a broad field encompassing such diverse subject areas as computer systems, distributed computing, computer networks, control, electronics, photonics, digital systems, circuits (analog, digital, mixed-mode, and power electronics), communications, signal processing, electromagnetics, and physics of semiconductor devices. Knowledge of the mathematical and natural sciences is applied to the theory, design, and implementation of devices and systems for the benefit of society. The Department offers two ABET-accredited undergraduate degrees: Electrical Engineering and Computer Engineering. In addition, the Department offers a joint undergraduate degree in Computer Science and Engineering, in conjunction with the Donald Bren School of Information and Computer Sciences; information is available in the Interdisciplinary Studies section of the *Catalogue*.

Some electrical engineers focus on the study of electronic devices and circuits that are the basic building blocks of complex electronic systems. Others study power electronics and the generation, transmission, and utilization of electrical energy. A large group of electrical engineers studies the application of these complex systems to other areas, including medicine, biology, geology, and ecology. Still another group studies complex electronic systems such as automatic controls, telecommunications, wireless communications, and signal processing.

Computer engineers are trained in various fields of computer science and engineering. They engage in the design and analysis of digital computers and networks, including software and hardware. Computer design includes topics such as computer architecture, VLSI circuits, computer graphics, design automation, system software, data structures and algorithms, distributed computing, and computer networks. Computer Engineering courses include programming in high-level languages such as Python, C++ and Java; use of software packages for analysis and design; design of system software such as operating systems; design of hardware/software interfaces and embedded systems; and application of computers in solving engineering problems. Laboratories in both hardware and software experiences are integrated within the Computer Engineering curriculum.

The undergraduate curricula in Electrical Engineering and Computer Engineering provide a solid foundation for future career growth, enabling graduates' careers to grow technically, administratively, or both. Many electrical and computer engineers will begin work in a large organizational environment as members of an engineering team, obtaining career satisfaction from solving meaningful problems that contribute to the success of the organization's overall goal. As their careers mature, technical growth most naturally results from the acquisition of an advanced degree and further development of the basic thought processes instilled in the undergraduate years. Administrative growth can result from the development of management skills on the job and/or through advanced degree programs in management.

Graduates of Electrical Engineering, Computer Engineering, and Computer Science and Engineering will find a variety of career opportunities in areas including wireless communication, voice and video coding, biomedical electronics, circuit design, optical devices and communication, semiconductor devices and fabrication, power systems, power electronics, computer hardware and software design, computer networks, design of computer-based control systems, application software, data storage and retrieval, computer graphics, pattern recognition, computer modeling, parallel computing, and operating systems.

Undergraduate Major in Computer Engineering

Program Educational Objectives: Graduates of the program will (1) be engaged in professional practice at or beyond the entry level or enrolled in high-quality graduate programs building on a solid foundation in engineering, mathematics, the sciences, humanities and social sciences, and experimental practice as well as modern engineering methods; (2) be innovative in the design, research and implementation of systems and products with strong problem solving, communication, teamwork, leadership, and entrepreneurial skills; (3) proactively function with creativity, integrity and relevance in the ever-changing global environment by applying their fundamental knowledge and experience to solve real-world problems with an understanding of societal, economic, environmental, and ethical issues. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

The undergraduate Computer Engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas fill in much of the remaining curriculum.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one course in computer programming (C, C++, Python, Java), and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN COMPUTER ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B, 2D, 2J, 3D, and 6D; Physics 7B/7LB or Physics 7C/7LC; Physics 7D-E, 7LD, 51A, 52A-B; Engineering EECS145.

Engineering Topics Courses: Students must complete a minimum of 26 units of engineering design.

Core Courses: Engineering EECS12, EECS20, EECS31, EECS31L, EECS40, EECS70A, EECS70B, EECS70LB, EECS111, EECS112, EECS112L, EECS113, EECS114, EECS115, EECS118, EECS129A-B, EECS140, EECS148, EECS150A, EECS150B, EECS170A, EECS170LA, EECS170B, EECS170LB. With the approval of a faculty advisor, students select any additional engineering topics courses needed to satisfy school and department requirements.

Engineering Elective Courses: Students select, with the approval of a faculty advisor, a minimum of three courses of engineering topics. At least two courses must be chosen from EECS104, EECS105, EECS107, EECS116, EECS117, EECS123, and Computer Science 142A. Additionally, EECS101, EECS141A, EECS141B, EECS152A, EECS152B, EECS170D, EECS199 or EECSH199 (up to 3 units) are approved as technical electives.

Engineering Professional Topics Course: ENGR190W.

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements; 199 and H199 courses are open to students with a 3.0 GPA or higher.

(The nominal Computer Engineering program will require 188 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary.)

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Computer Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their advisor. Computer Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisor.

Sample Program of Study — Computer Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
EECS12	Physics 7B/7LB	Physics 7D, 7LD
General Education	or Physics 7C/7LC	EECS20
General Education	General Education	General Education
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 6D
Physics 7E, 52A	Physics 51A, 52B	EECS40
EECS31	EECS70A	EECS70B, 70LB
	EECS31L	General Education
Junior		
EECS170A, 170LA	EECS170B, 170LB	EECS150B
EECS145	EECS150A	EECS111
EECS114	EECS112	EECS113
General Education	EECS140	EECS148
Senior		
EECS129A	EECS129B	Engineering Elective
EECS115	ENGR190W	General Education
EECS118	EECS112L	General Education
Engineering Elective	General Education	Engineering Elective

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

Undergraduate Major in Computer Science and Engineering (CSE)

This program is administered jointly by the Department of Electrical Engineering and Computer Science (EECS) in The Henry Samueli School of Engineering and the Department of Computer Science in the Donald Bren School of Information and Computer Sciences. For information, see the Interdisciplinary Studies section of the *Catalogue*, page 370.

REQUIREMENTS FOR THE B.S. DEGREE IN COMPUTER SCIENCE AND ENGINEERING

University Requirements: See pages 55–62.

Major Requirements: See pages 370–371 in the Interdisciplinary Studies section of the *Catalogue.*

Undergraduate Major in Electrical Engineering

Program Educational Objectives: Graduates of the program will (1) engage in professional practice in academia, industry, or government; (2) promote innovation in the design, research and implementation of products and services in the field of electrical engineering through strong communication, leadership and entrepreneurial skills; (3) engage in life-long learning in the field of electrical engineering. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

The undergraduate Electrical Engineering curriculum is built around a basic core of humanities, mathematics, and natural and engineering science courses. It is arranged to provide the fundamentals of synthesis and design that will enable graduates to begin careers in industry or to go on to graduate study. UCI Electrical Engineering students take courses in network analysis, electronics,

electronic system design, signal processing, control systems, electromagnetics, and computer engineering. They learn to design circuits and systems to meet specific needs and to use modern computers in problem analysis and solution.

Electrical Engineering majors have the opportunity to select a specialization in Electro-optics and Solid-State Devices; and Systems and Signal Processing. In addition to the courses offered by the Department, the major program includes selected courses from the Donald Bren School of Information and Computer Sciences.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one course in computational methods (C, C++), and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN ELECTRICAL ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E; Chemistry 1A; Physics 7B/7LB or Physics 7C/7LC; Physics 7D-E, 7LD, 51A-B, 52A-B-C; Engineering EECS145.

Engineering Topics Courses: Students must complete each of the following courses and accumulate a minimum of 28 units of engineering design, including at least one course with more than 50 percent design content: Engineering ENGR54 or ENGR80, EECS10, EECS31, EECS31L, EECS70A, EECS70B and EECS70LB, EECS140, EECS150A, EECS150B, EECS160A, EECS160LA, EECS170A, EECS170LA, EECS170B, EECS170LB, EECS170C, EECS170LC, EECS170D (or EECS115), EECS180, EECS189A-B. Students select, with the approval of a faculty advisor, any additional engineering topics courses needed to satisfy school and department requirements.

Technical Elective Courses: Students select, with the approval of a faculty advisor, a minimum of five courses of technical elective courses. Students may select an area of specialization and complete the associated requirements, as shown below.

Engineering Professional Topics Course: ENGR190W.

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements; 199 and H199 courses are open to students with a 3.0 GPA or higher.

(The nominal Electrical Engineering program will require 189 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary.)

Specialization in Electro-optics and Solid-State Devices: 11 units selected from Engineering EECS170D (if not used to satisfy major requirements), EECS174, EECS175A-B, EECS187, EECS188, EECS198 (Special Topics in Electro-optics or Solid State Materials/Devices), EECS199 or EECSH199 (up to 3 units).

Specialization in Systems and Signal Processing: 12 units selected from Engineering EECS101, EECS141A, EECS141B, EECS152A, EECS152B, EECS160B, EECS163, EECS163L, EECS198 (Special Topics in Computer Graphics or Digital Signal Processing Laboratory), or EECS199 or EECSH199 (up to 3 units).

PROGRAM OF STUDY

The sample program of study chart shown is typical for the accredited major in Electrical Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their advisor. Electrical Engineering majors must consult with the academic counselors in the Student Affairs Office and with their faculty advisors at least once a year.

Sample Program of Study — Electrical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
EECS10	Physics 7B/7LB	Physics 7D, 7LD
General Education	or Physics 7C/7LC	General Education
General Education	Chemistry 1A	General Education
	General Education	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E, 52A	Physics 51A, 52B	Physics 51B, 52C
EECS31	EECS70A	EECS70B, 70LB
	EECS31L	
Junior		
EECS170A, 170LA	EECS170B, 170LB	EECS170C, EECS170LC
EECS180	EECS150A	EECS150B
EECS145	ENGR54 or ENGR80	General Education
General Education	EECS140	General Education
Senior		
EECS170D	EECS189B	Technical Elective
EECS160A, 160LA	ENGR190W	Technical Elective
EECS189A	Technical Elective	General Education
Technical Elective	Technical Elective	

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

Graduate Study in Electrical and Computer Engineering

The Department offers M.S. and Ph.D. degrees in Electrical and Computer Engineering with a concentration in Electrical Engineering, Computer Networks and Distributed Computing, Computer Systems and Software, or Computer Graphics and Visualization. Because most graduate courses are not repeated every quarter, students should make every effort to begin their graduate program in the fall.

Detailed descriptions of the four concentrations are as follows.

ELECTRICAL ENGINEERING CONCENTRATION (EE)

The Electrical Engineering faculty study the following areas: optical and solid-state devices, including quantum electronics and optics, integrated electro-optics and acoustics, design of semiconductor devices and materials, analog and mixed-signal IC design, microwave and microwave devices, and scanning acoustic microscopy; systems engineering and signal processing, including communication theory, machine vision, signal processing, power electronics, neural networks, communications networks, systems

engineering, and control systems. Related communication networks topics are also addressed by the Networked Systems M.S. and Ph.D. degrees (listed in the Interdisciplinary Studies section of the *Catalogue*).

COMPUTER GRAPHICS AND VISUALIZATION CONCENTRATION (CGV)

The concentration in Computer Graphics and Visualization provides students with a solid base in the design, development, and evaluation of scientific and information visualization systems. Both hardware and software aspects are addressed with a particular focus on the development of algorithms and techniques for the representation of complex scientific data. The main research activities of the faculty in this concentration are in the fields of computer graphics, scientific visualization, computer-aided geometric design, imaging, image processing, and virtual reality. Application areas include computational physics, computational chemistry, computational fluid dynamics, computational and molecular biology, medical and biomedical imaging, civil and environmental engineering, photorealistic rendering, animation, remote sensing, industrial design, and media and arts.

COMPUTER NETWORKS AND DISTRIBUTED COMPUTING CONCENTRATION (CNDC)

The concentration in Computer Networks and Distributed Computing is concerned with the design and evaluation of computer networks and distributed computer systems, and their integration into a comprehensive computing network. Both hardware and software aspects of these systems are covered. Specific topics include computer communication protocols; performance modeling and analysis of computer networks; computer network hardware; reliability, security, and fault tolerance in computer networks and distribution computer systems; distributed operating systems; distributed software architectures, distributed data bases, network-based parallel computing, and programming languages for parallel/distributed processing. Related topics are addressed by the Networked Systems M.S. and Ph.D. degrees (listed in the Interdisciplinary Studies section of the *Catalogue*) and within the Donald Bren School of Information and Computer Sciences.

COMPUTER SYSTEMS AND SOFTWARE CONCENTRATION (CSS)

The Computer Systems and Software Concentration is concerned with the set of engineering principles which are used for design and construction of information-processing systems and software. The engineering design procedures are based on both the computational principles and theories discovered in the field of computer science and new highly integrated component devices made by electrical engineers. The main research activities of the faculty in this concentration are in the areas of fault-tolerant computing, parallel and distributed computer systems, ultra-reliable real-time computer systems, VLSI architectures, computer design automation, numerical processing, and intelligent management.

MASTER OF SCIENCE DEGREE GENERAL REQUIREMENTS

Two plans are offered for the M.S. degree: a thesis option and a comprehensive examination option. For either option, students are required to develop a complete program of study with advice from their faculty advisor. The graduate advisor must approve the study plan. Part-time study toward the M.S. degree is available. The program of study must be completed within four calendar years from first enrollment.

Plan I: Thesis Option

The thesis option requires completion of 36 units of study; an original research investigation; the completion of an M.S. thesis; and approval of the thesis by a thesis committee. The thesis committee is composed of three full-time faculty members with the faculty advisor of the student serving as the chair. Required undergraduate core courses and graduate seminar courses, such as EECS292, EECS293, EECS294, and EECS295, may not be counted toward the 36 units. No more than four units of EECS299 and three units of undergraduate electives may be counted toward the 36 units. Up to 12 of the required 36 units may be from EECS296 (M.S. Thesis Research) with the approval of the student's thesis advisor. Additional concentration-specific requirements are as follows; a list of core and concentration courses is given at the end of this section.

Electrical Engineering Concentration: At least seven concentration courses in the Electrical Engineering concentration (EE) must be completed.

Computer Networks and Distributed Computing Concentration: Four core courses in the Computer Networks and Distributed Computing concentration (CNDC) must be completed with a grade of B (3.0) or better. At least three additional core or concentration courses must also be completed.

Computer Systems and Software Concentration: Four core courses in the Computer Systems and Software concentration (CSS) must be completed with a grade of B (3.0) or better. At least three additional core or concentration courses must also be completed.

Computer Graphics and Visualization Concentration: Four core courses in the Computer Graphics and Visualization concentration (CGV) must be completed with a grade of B (3.0) or better. At least three additional core or concentration courses must also be completed.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires the completion of 36 course units and a comprehensive examination. Also, students should take at least 12 courses. Only one EECS299 can be counted if the EECS299 course is three or more units. Undergraduate core courses and graduate seminar courses, such as EECS292, EECS293, EECS294, and EECS295, may not be counted toward the 36 units and 12 courses requirement. No more than three units of EECS299 and six units of undergraduate electives may be counted. In fulfillment of the comprehensive examination element of the M.S. degree program, students will complete two term paper-length reports on the current state-of-the-art of two separate technical fields corresponding to the concentration area. The term papers are completed as part of the end-of-course requirements for EECS294 (Electrical and Computer Colloquium), two units of which are needed to fulfill degree requirements. Each term paper must be completed with a grade of B or better; and each Colloquium section used to meet M.S. degree requirements must be completed with a satisfactory grade. Both Colloquium sections must be completed at the student's first opportunity upon enrollment in the ECE graduate program. Additional concentration-specific requirements are as follows; a list of core and concentration courses is given at the end of this section.

Electrical Engineering Concentration: Students enrolled in the Electrical Engineering (EE) concentration who choose the Comprehensive Examination option must select one of the following plans of study.

Circuits and Devices Plan of Study: At least four courses from the following list must be completed: EECS270A, EECS270B, EECS277A, EECS277B, EECS280A, EECS285A. At least five additional courses from the list of EE concentration courses must be completed.

Systems Plan of Study: At least four courses from the following list must be completed*: EECS240, EECS241A, EECS250, EECS251A, EECS260A, EECS267A. At least five additional courses from the list of EE concentration courses must be completed.

*If all six courses are not offered in an academic year, students who graduate in that year can petition to replace the courses that are not offered by EECS242 and/or EECS244.

Computer Networks and Distributed Computing Concentration: Four core courses in the Computer Networks and Distributed Computing concentration (CNDC) must be completed with a grade of B (3.0) or better. At least four additional core or concentration courses must also be completed.

Computer Systems and Software Concentration: Four core courses in the Computer Systems and Software concentration (CSS) must be completed with a grade of B (3.0) or better. At least four additional core or concentration courses must also be completed.

Computer Graphics and Visualization Concentration: Four core courses in the Computer Graphics and Visualization concentration (CGV) must be completed with a grade of B (3.0) or better. At least four additional core or concentration courses must also be completed.

List of Concentration Courses

Electrical Engineering Concentration: EECS202A-B, EECS203A, EECS210, EECS213, EECS215, EECS217, EECS240, EECS241A-B, EECS242, EECS243, EECS244, EECS245, EECS248A-B, EECS250, EECS251A-B, EECS260A, EECS261A, EECS267A-B, EECS270A, EECS270B-C-D, EECS272, EECS274, EECS275A-B, EECS277A-B-C, EECS278, EECS279, EECS280A, EECS280B, EECS282, EECS285A, EECS285B.

(courses denoted with * are also core courses)

Computer Networks and Distributed Computing Concentration: EECS211*, EECS213*, EECS215*, EECS217*, EECS218*, EECS219, EECS221, EECS222A-B-C-D, EECS223, EECS224, EECS248A*, EECS248B, Computer Science 233, 234, 236.

Computer Systems and Software Concentration: EECS210, EECS211*, EECS213*, EECS215*, EECS217*, EECS218*, EECS221, EECS222A-B-C-D, EECS223, EECS224, EECS225, EECS228, EECS248A*.

Computer Graphics and Visualization Concentration: EECS202A, EECS202B, EECS203A, EECS204*, EECS205, EECS207A, EECS209A, EECS210, EECS211*, EECS213*, EECS215*, EECS218*, EECS248A*, EECS250, ICS 266, ICS 285.

DOCTOR OF PHILOSOPHY DEGREE GENERAL REQUIREMENTS

The doctoral program in Electrical and Computer Engineering is tailored to the individual background and interest of the student. There are several milestones to pass: admission to the Ph.D. program by the Graduate Committee; Ph.D. preliminary examination on the background and potential for success in the doctoral program; departmental teaching requirement which can be satisfied through service as a teaching assistant or equivalent; original research work; development of a research report and dissertation proposal; advancement to Ph.D. candidacy in the third year (second year for students who entered with a master's degree) through the Ph.D. qualifying examination conducted on behalf of the Irvine Division of the Academic Senate; completion of a significant research investigation; and completion and approval of a dissertation. A public Ph.D. dissertation defense is also required. During the Ph.D. study, four quarters of EECS294 must be completed.

The Ph.D. preliminary examination is conducted twice a year, in the spring and fall quarters. Detailed requirements for each concentration are specified in the departmental Ph.D. preliminary examination policies, available from the EECS Graduate Admissions Office. The depth examination is conducted during each spring quarter. A student must pass the Ph.D. preliminary examination within two complete academic year cycles after entering the Ph.D. program. A student has only two chances to take and pass the Ph.D. preliminary examination. A student who fails the Ph.D. preliminary examination twice will be asked to withdraw from the program, or will be dismissed from the program, and may not be readmitted into the program.

The Ph.D. degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. Part-time study toward the Ph.D. degree is not permitted. The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years.

Courses in Electrical Engineering and Computer Science

***(Schedule of Classes* designation: EECS)**

LOWER-DIVISION

NOTE: The undergraduate courses listed below are open only to students in The Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

EECS10 Computational Methods in Electrical and Computer Engineering (4) F, Summer. An introduction to computers and structured programming. Binary Data Representation. Hands-on experience with a high-level structured programming language. Introduction to algorithm efficiency. Applications of structured programming in solving engineering problems. Programming laboratory. Prerequisite or corequisite: Mathematics 2A. Only one course from EECS10, EECS12, ENGR10, and MAE10 may be taken for credit. (Design units: 0)

EECS12 Introduction to Programming (4) F. An introduction to computers and programming. Python programming syntax/style, types. Numbers and sequences. Control flow. I/O and errors/exceptions. Function calling, parameter passing, formal arguments, return values. Variable scoping. Programming laboratory. Corequisite: Mathematics 2A. Only one course from EECS10, EECS12, ENGR10, and MAE10 may be taken for credit. (Design units: 0)

EECS20 Computer Systems and Programming in C (4) S, Summer. Introduction to computer systems. Data representation and operations. Simple logic design. Basic computer organization. Instruction set architecture and assembly language programming, Introduction to C. Functions and recursion. Data structures, pointers, and linked lists. Programming laboratory. Prerequisite: EECS12. (Design units: 1)

EECS31 Introduction to Digital Systems (4) F, S, Summer. Digital representation of information. Specifications of combinational and sequential systems. Analysis and design of networks of gates and flip flops. Standard modules and their use. Introduction to algorithmic systems: datapath and control. Prerequisite: EECS10, MAE10, or CSE21/ICS 21. Same as CSE31. (Design units: 2)

EECS31L Introduction to Digital Logic Laboratory (3) W, S, Summer. Introduction to common digital building blocks: gates, memory circuits, MSI components. Operating characteristics, specifications, and applications. Design of simple combinational and sequential digital systems (processors and state machines). Construction and debugging techniques using hardware description languages and CAD tools. Prerequisites: EECS31/CSE31; EECS10 or EECS12 or CSE22/ICS 22. Same as CSE31L. (Design units: 3)

EECS40 Object-Oriented Systems and Programming (4) S, Summer. Primitive types and expressions. The class and method definition. Information hiding and encapsulation. Objects and reference. Overloading. Constructors. Inheritance basics. Programming with inheritance. Dynamic binding and polymorphism. Exception handling. An overview of streams and file input/output. Programming laboratory. Prerequisite: EECS20. (Design units: 2)

EECS70A Network Analysis I (4) W, S, Summer. Modeling and analysis of electronic networks. Basic network theorems. Sinusoidal steady state and transient analysis of RLC networks and the impedance concept. Corequisite: Mathematics 2J or 3D. Prerequisites: Physics 7D; EECS10, MAE10, or CSE21/ICS 21. Same as CSE70A. (Design units: 1)

EECS70B Network Analysis II (4) S, Summer. Laplace transforms, complex frequency, and the s-plane. Network functions and frequency response, including resonance. Bode plots. Two-port network characterization. Corequisite: EECS70LB. Prerequisites: EECS10, CEE10, or MAE10; EECS70A. (Design units: 1)

EECS70LB Networks Analysis II Laboratory (1) S, Summer. Laboratory to accompany EECS70B. Corequisite: EECS70B. Prerequisites: EECS10, CEE10, or MAE10; EECS70A. (Design units: 1)

UPPER-DIVISION

EECS101 Introduction to Machine Vision (3). The use of digital computers for the analysis of visual scenes; image formation and sensing, color, segmentation, shape estimation, motion, stereo, pattern classification, computer architectures, applications. Computer experiments are used to illustrate fundamental principles. Prerequisite: EECS150A or consent of instructor. (Design units: 2)

EECS104 Fundamentals of Computer Graphics (4). Instruction in the fundamental algorithms and data structures used in computer image generation and manipulation including: output primitives, linear transformations, windowing, hidden-line removal, and shading. Prerequisite: EECS40 or CSE22. (Design units: 2)

EECS105 Fundamentals of Scientific Visualization (4). Introduces visualization techniques for various types of measured or computer-simulated data. Typical applications for these visualization techniques include the study of airflows around car bodies, medical data, and molecular structures. Prerequisite: EECS104 or consent of instructor. (Design units: 2)

EECS107 Fundamentals of Digital Image Processing (4). Introduces theory and practice of digital image processing. Topics presented include two-dimensional signal processing theory, image acquisition, representation, elementary operations, enhancement, filtering, coding, compressing, restoration, and analysis, as well as image processing hardware. Prerequisite: EECS152A or consent of instructor. EECS107 and Computer Science 111 may not both be taken for credit. (Design units: 2)

EECS111 System Software (4) S. Multiprogramming, interrupt, processes, kernel, parallelism, critical sections, deadlocks, communication, multiprocessing, multilevel memory management, binding, name management, file systems, protection, resource allocation, scheduling. Experience with concurrent programming, synchronization mechanisms, interprocess communication. Prerequisites: EECS112; ICS 23 or EECS114. Only one course from EECS111 and CSE104/Computer Science 143A may be taken for credit. (Design units: 2)

EECS112 Organization of Digital Computers (4) W. Building blocks and organization of digital computers, the arithmetic, control, and memory units, and input/out devices and interfaces. Microprogramming and microprocessors. Prerequisite: EECS31L/CSE31L. Same as CSE132. EECS112/CSE132 and Computer Science 152 may not both be taken for credit. (Design units: 4)

EECS112L Organization of Digital Computers Laboratory (3) W. Companion laboratory to EECS112. Specification and implementation of a processor-based system using a hardware description language such as VHDL. Hands-on experience with design tools including simulation, synthesis, and evaluation using testbenches. Prerequisite: EECS112. (Design units: 3)

EECS113 Processor Hardware/Software Interfaces (4) S. Hardware/software interfacing, including memory and bus interfaces, devices, I/O, and compiler code generation/instruction scheduling. Experience microcontroller programming and interfacing. Specific compiler code generation techniques covered including local variable and register allocations, instruction dependences and scheduling, and code optimization. Prerequisite: EECS112/CSE132. (Design units: 3)

EECS114 Engineering Data Structures and Algorithms (4) F. Introduces abstract behavior of classic data structures, alternative implementations, informal analysis of time and space efficiency. Also introduces classic algorithms and efficient algorithm design techniques (recursion, divide-and-conquer, branch-and-bound, dynamic programming). Prerequisite: EECS40. (Design units: 2)

EECS115 Introduction to VLSI (4) F. A first course in the design of Very Large Scale Integrated (VLSI) systems and chips. Review of CMOS VLSI technology. Analysis and synthesis of basic and complex CMOS gates. Introduction to CAD methodology and usage of CAD tools. Prerequisite: EECS112/CSE132; EECS170B or CSE112. Same as CSE151. (Design units: 4)

EECS116 Introduction to Data Management (4). Introduction to the design of databases and the use of database management systems (DBMS) for applications. Topics include entity-relationship modeling for design, relational data model, relational algebra, relational design theory, and Structured Query Language (SQL) programming. Prerequisite: one from ICS 23, ICS H23, Informatics 45, or EECS114, with a grade of C or better. Same as Computer Science 122A. (Design units: 1)

EECS117 Parallel Computer Systems (3). General introduction to parallel computing focusing on parallel algorithms and architectures. Parallel models: Flynn's taxonomy, dataflow models. Parallel architectures: systolic arrays, hypercube architecture, shared memory machines, dataflow machines, reconfigurable architectures. Parallel algorithms appropriate to each machine type area also discussed. Prerequisites: EECS20 and EECS112/CSE132. (Design units: 1)

EECS118 Introduction to Knowledge Engineering and Software Engineering (4). Introduction of basic concepts in knowledge engineering and software engineering. Knowledge representation and reasoning, search, planning, software life cycle, requirements engineering, software design languages, declarative programming, testing, maintenance, and connections between knowledge engineering and software engineering. Prerequisite: EECS40 or equivalent. (Design units: 2)

EECS123 Introduction to Real-Time Distributed Programming (4). Introduction to the techniques for programming applications involving timing-sensitive actions. Hands-on experiences with object-oriented programming styles. Timing requirements, timing specification, response times, deadlines, application programming interfaces to real-time operating systems and middleware, remote procedure call, and distributed objects. Prerequisites: CSE104/Computer Science 143A or EECS111, and EECS112. (Design units: 2)

EECS129A-B Computer Engineering Senior Design Project (2-2) F, W. Conception, planning, implementation, programming, testing of an approved project. Options include: parallel processing, VLSI design, microprocessor-based design, among others. Prerequisite: senior standing. In-progress grading. (Design units: 2-2)

EECS140 Engineering Probability (4) S. Sets and set operations; nature of probability, sample spaces, fields of events, probability measures; conditional probability, independence, random variables, distribution functions, density functions, conditional distributions and densities; moments, characteristic functions, random sequences, independent and Markov sequences. Prerequisite: Mathematics 2D. (Design units: 0)

EECS141A Communication Systems I (3). Introduction to analog communication systems including effects of noise. Modulation-demodulation for AM, DSB-SC, SSB, VSB, QAM, FM, PM, and PCM with application to radio, television, and telephony. Signal processing as applied to communication systems. Prerequisites: EECS150A and EECS140. (Design units: 1)

EECS141B Communication Systems II (3). Signal space analysis. Optimum receivers for digital communication. Maximum *a posteriori* and maximum likelihood detection. Matched filter and correlation receiver. PAM, QAM, PSK, FSK and MSK and their performance. Introduction to equalization, synchronization, information theory, and error control codes. Prerequisite: EECS141A. (Design units: 1)

EECS144 Antenna Design for Wireless Communication Links (4). Analysis and synthesis of antennas and antenna arrays. Adaptive arrays and digital beam forming for advanced wireless links. Friis transmission formula. Wireless communication equations for cell-site and mobile antennas, interference, slow and fast fading in mobile communication. Prerequisite: EECS180 or consent of instructor. (Design units: 0)

EECS145 Electrical Engineering Analysis (4) F. Vector calculus, complex functions, and linear algebra with applications to electrical engineering problems. Prerequisites: Mathematics 2J and 3D. (Design units: 0)

EECS148 Introduction to Computer Networks (4). Network architectures, models, protocols, routing, flow control, and services. Queuing models for network performance analysis. Prerequisites: EECS40 or CSE22 or consent of instructor; EECS112 or consent of instructor; EECS140 or Mathematics 67. (Design units: 2)

EECS150A Continuous-Time Signals and Systems (4) W. Characteristics and properties of continuous-time (analog) signals and systems. Analysis of linear time-invariant continuous-time systems using differential equation and convolutional models. Analysis of these systems using Laplace transforms, Fourier series, and Fourier transforms. Examples from applications to telecommunications. Prerequisites: EECS70A/CSE70A; EECS145. (Design units: 0)

EECS150B Discrete-Time Signals and Systems (4) S. Analysis of discrete-time linear-time-invariant (DTLTI) systems in the time domain and using z-transforms. Introduction to techniques based on Discrete-Time, Discrete, and Fast Fourier Transforms. Examples of their application to digital signal processing and digital communications. Prerequisite: EECS70A/CSE70A. Same as CSE120A. (Design units: 0)

EECS152A Digital Signal Processing (3). Nature of sampled data, sampling theorem, difference equations, data holds, z-transform, w-transform, digital filters, Butterworth and Chebychev filters, quantization effects. Prerequisite: EECS150B/CSE120A. Same as CSE135A. (Design units: 2)

EECS152B Digital Signal Processing Design and Laboratory (3). Students plan and perform 10 core laboratory exercises covering signal synthesis and analysis with various filter and frequency transform processes. Models of radio and radar/sonar signal processing are included. Prerequisite: EECS152A/CSE135A. Same as CSE135B. (Design units: 3)

EECS160A Introduction to Control Systems (4) F. Modeling, stability, and specifications of feedback control systems. Root locus, Bode plots, Nyquist criteria, and state-space methods for dynamic analysis and design. Corequisite: EECS160LA. Prerequisites: EECS10, CEE10, or MAE10; EECS170B, EECS170LB; EECS150A. (Design units: 2)

EECS160LA Control Systems I Laboratory (1) F. Laboratory accompanying EECS160A. Corequisite: EECS160A. (Design units: 1)

EECS160B Sampled-Data and Digital Control Systems (3). Sampled-data and digital control systems. Sampling process and theory of digital signals; z-transform and modeling; stability; z-plane, frequency response, state-space techniques of digital control system synthesis. Prerequisites: EECS31; EECS160A, EECS160LA. (Design units: 2)

EECS161 Electric Machines and Drives (3) S. Magnetic circuits and transformers. Fundamentals of energy conversion. Application to synchronous, induction, commutator, and special purpose machines. Electric drives. Corequisite: EECS161L. Prerequisite: EECS70B or consent of instructor. (Design units: 2)

EECS161L Electric Machines and Drives Laboratory (1) S. Laboratory exercises supplementing the content of EECS161. Corequisite: EECS161. (Design units: 0)

EECS163 Power Systems (4). Generation, transmission, and use of electrical energy. Fault calculation, protection, stability, and power flow. Corequisite: EECS163L. Prerequisite: EECS70B. (Design units: 1)

EECS163L Power Systems Laboratory (1). Experiments and field trips relevant to studies in power systems. Corequisite: EECS163. (Design units: 0)

EECS166A Industrial and Power Electronics (4). Power switching devices, pulse width modulation (PWM) methods, switching converter topologies, control, and magnetics. Prerequisites: EECS170C; EECS160A or consent of instructor. Concurrent with EECS267A. (Design units: 2)

EECS166B Advanced Topics in Industrial and Power Electronics (3). Practical design of switching converters, electromagnetic compatibility, thermal management, and/or control methods. Prerequisite: EECS166A or consent of instructor. (Design units: 1)

EECS170A Electronics I (4) F. The properties of semiconductors, electronic conduction in solids, the physics and operation principles of semiconductor devices such as diodes and transistors, transistor equivalent circuits, and transistor amplifiers. Corequisite: Physics 7E. Prerequisites: EECS70A, Physics 7D. (Design units: 1)

EECS170LA Electronics I Laboratory (1) F. For CpE and EE majors. Laboratory accompanying EECS170A to perform experiments on semiconductor material properties, semiconductor device physics and operation principles, and transistor amplifiers to improve experimental skills and to enhance the understanding of lecture materials. Corequisites: EECS170A, Physics 7E. Prerequisites: EECS70A, EECS70B, Physics 7D. (Design units: 1)

EECS170B Electronics II (4) W. Design and analysis of single-stage amplifiers, biasing circuits, inverters, logic gates, and memory elements based on CMOS transistors. Corequisite: EECS170LB. Prerequisites: EECS70B, EECS170A, EECS170LA. (Design units: 2)

EECS170LB Electronics II Laboratory (1) W. Laboratory accompanying EECS170B. Corequisites: EECS170B. Prerequisites: EECS170A, EECS170LA. (Design units: 1)

EECS170C Electronics III (4) S. Principles of operation, design, and utilization of integrated circuit modules, including multi-stage amplifiers, operational amplifiers, and logic circuits. Corequisites: EECS170LC. Prerequisites: EECS170B, EECS170LB. (Design units: 2)

EECS170LC Electronics III Laboratory (1) S. Laboratory accompanying EECS170C to provide hands-on training in design of digital/analog circuits/subsystems. Corequisites: EECS170C. Prerequisites: EECS170B, EECS170LB. (Design units: 1)

EECS170D Integrated Electronic Circuit Design (4) F. Overview of design and fabrication of modern digital integrated circuits. Fabrication of CMOS process; transistor-level design simulation, functional characteristics of basic digital integrated circuits, different logic families including static and dynamic logic, layout and extraction of digital circuits; automated design tools. Prerequisites: EECS170C and EECS170LC. (Design units: 4)

EECS170E Analog and Communications IC Design (4). Advanced topics in design of analog and communications integrated circuits. Topics include: implementation of passive components in integrated circuits; overview of frequency response of amplifiers, bandwidth estimation techniques, high-frequency amplifier design; design of radio-frequency oscillators. Prerequisite: EECS170C. (Design units: 3)

EECS174 Semiconductor Devices (4). Metal-semiconductor junctions, diodes, bipolar junction transistors, MOS structures, MOSFETs, CMOS technology, LEDs, and laser diodes. Prerequisite: EECS170A. (Design units: 1)

EECS175A Very Large Scale Integration (VLSI) Project (4) S. *Students* create VLSI design projects from conception through architecture, floor planning, detailed design, simulation, verification, and submission for project fabrication. Emphasis on practical experience in robust VLSI design techniques. Prerequisites: EECS170D; EECS115 or consent of instructor. Concurrent with EECS275A. (Design units: 4)

EECS176 Fundamentals of Solid-State Electronics and Materials (4). Physical properties of semiconductors and the roles materials play in device operation. Topics include: crystal structure, phonon vibrations, energy band, transport phenomenon, optical properties and quantum confinement effect essential to the understanding of electronic, optoelectronic, and nanodevices. Prerequisite: EECS170A. (Design units: 1)

EECS179 Microelectromechanical Systems (MEMS) (4). Small-scale machines, small-scale phenomena, MEMS fabrication, MEMS CAD tools, MEMS devices and packaging, MEMS testing. Prerequisite: Physics 51A or consent of instructor. (Design units: 2)

EECS180 Engineering Electromagnetics (4) F. Electromagnetic fields and solutions to problems in engineering applications; Maxwell's equations and plane wave propagation, reflection, and transmission. Corequisites: Mathematics 2D and 3D. Prerequisite: Physics 7E. (Design units: 1)

EECS182 Monolithic Microwave Integrated Circuit (MMIC) Analysis and Design (4). Design of microwave amplifiers including low-noise amplifier, multiple stage amplifiers, power amplifiers, and introduction to broadband amplifiers. The goal is to provide the basic knowledge for the design of microwave amplifiers ranging from wireless system to radar system. Prerequisite: EECS180 or consent of instructor. (Design units: 3)

EECS187 Engineering Electrodynamics (4). Time-varying electromagnetic fields including waveguides, resonant cavities, radiating systems. Motion of charged particles in electromagnetic fields, radiation by moving charges. Scattering and dispersion. Prerequisite: EECS180. (Design units: 1)

EECS188 Optical Electronics (4) W. Photodiodes and optical detection, photometry and radiometry, geometric optics, lens theory, imaging system, EM wave propagation, optical waveguides and fibers, heterojunction structures, laser theory, semiconductor lasers, and optical transmission system. Prerequisite: consent of instructor. (Design units: 1)

EECS189A-B Electrical Engineering Senior Design Project (2-2) F, W. Design projects for seniors in the Electrical Engineering program. Each project is supervised by a faculty member. Prerequisites: EECS170C, EECS150A, EECS180, and senior standing. EECS189A: In-Progress grading. (Design units: 2-2)

EECS195 Special Topics in Electrical and Computer Engineering (1 to 4). Prerequisites vary. May be repeated for credit as topics vary. (Design units: varies)

EECS198 Group Study (1 to 4). Group study of selected topics in engineering. Prerequisites vary. (Design units: varies)

EECS198L Group Laboratory (1 to 4). Group laboratory for experimentation or design in connection with special projects or EECS198 courses. Corequisite: EECS198. (Design units: varies)

EECS199 Individual Study (1 to 4). For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. May be taken for credit for a total of six units. (Design units: varies)

EECSH199 Individual Study for Honors Students (1 to 5). For undergraduate honor students majoring in Electrical Engineering. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Electrical and Computer Engineering. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor; open only to Campuswide Honors students. May be taken for credit four times. (Design units: varies)

GRADUATE

EECS202A Principles of Imaging (4) F. Linear systems, probability and random processes, image processing, projection imaging, tomographic imaging. Prerequisite: Physics 51B or 61B or equivalent. Same as Physics 233A. Concurrent with Physics 147A.

EECS202B Techniques in Medical Imaging I: X-ray, Nuclear, and NMR Imaging (4) W. Ionizing radiation, planar and tomographic radiographic and nuclear imaging, magnetism, NMR, MRI imaging. Prerequisite: EECS202A. Same as Physics 233B. Concurrent with Physics 147B.

EECS202C Techniques in Medical Imaging II: Ultrasound, Electrophysiological, Optical (4) S. Sound and ultrasound, ultrasonic imaging, physiological electromagnetism, EEG, MEG, ECG, MCG, optical properties of tissues, fluorescence and bioluminescence, MR impedance imaging, MR spectroscopy, electron spin resonance and ESR imaging. Prerequisite: EECS202B. Same as Physics 233C. Concurrent with Physics 147C.

EECS203A Digital Image Processing (3). Pixel-level digital image representation and elementary operations; Fourier and other unitary transforms; compression, enhancement, filtering, and restoration; laboratory experience is provided. Prerequisite: EECS152A.

EECS204 Advanced Computer Graphics (4). Provides the fundamental understanding of mathematical and physical models used in computer graphics applications: physics of color image formation, polygon approximations, ray tracing, radiosity and image-based modeling and rendering, visualization and geometric modeling. Prerequisite: EECS104 and ICS 183, or consent of instructor.

EECS207A Advanced Digital Image Processing (4). Introduces image and texture segmentation and symbolic representation, three-dimensional modeling, relational structures, three-dimensional object recognition, three-dimensional scene analysis and interpretation. An application area of particular interest is biomedical imaging. Prerequisite: EECS107 or consent of instructor.

EECS209A Rendering Techniques for Biomedical Imaging (4). Image acquisition techniques (overview), combining different modalities (CT/MRI/fMRI/PET), 2-D image enhancement techniques, image storage (wavelet compression), feature detection, 3-D surface reconstruction, volume rendering, scalability, final project (hands-on experience).

EECS210 Modeling and Rendering for Image Synthesis (3). Provides the fundamental understanding of mathematical and physical models used in image synthesis applications: geometric models, physics of color image formation, polygon approximations, ray tracing, and radiosity.

EECS211 Advanced System Software (3). Study of operating systems including interprocess communication, scheduling, resource management, concurrency, reliability, validation, protection and security, and distributed computing support. System software design languages and modeling analysis. Prerequisite: EECS112 and EECS111; or consent of instructor.

EECS213 Computer Architecture (3). Problems in hardware, firmware (microprogram), and software. Computer architecture for resource sharing, real-time applications, parallelism, microprogramming, and fault tolerance. Various architectures based on cost/performance and current technology. Prerequisites: EECS112, EECS112L.

EECS215 Design and Analysis of Algorithms (3). Computer algorithms from a practical standpoint. Algorithms for symbolic and numeric problems such as sorting, searching, graphs, and network flow. Analysis includes algorithm time and space complexity.

EECS217 VLSI System Design (4) S. Overview of integrated fabrication, circuit simulation, basic device physics, device layout, timing; MOS logic design; layout generation, module generation, techniques for very large scale integrated circuit design. Prerequisite: EECS112.

EECS218 Distributed Computer Systems (3) S. Design and analysis techniques for decentralized computer architectures, communication protocols, and hardware-software interface. Performance and reliability considerations. Design tools. Prerequisites: EECS211 and EECS213. Same as Networked Systems 261.

EECS219 Distributed Software Architecture and Design (3). Practical issues for reducing the software complexity, lowering cost, and designing and implementing distributed software applications. Topics include the distributed object model distributed environment, platform-independent software agents and components, the middleware architecture for distributed real-time and secure services. Prerequisite: EECS211.

EECS220 Advanced Digital Signal Processing Architecture (3). Studies the latest DSP architectures for applications in communication (wired and wireless) and multimedia processing. Emphasis given to understanding the current design techniques and to evaluate the performance, power, and application domain of the latest DSP processors. Prerequisite: EECS 213 or consent of instructor.

EECS221 Topics in Computer Engineering (3). New research results in computer engineering. May be repeated for credit.

EECS222A System-on-Chip Description and Modeling (3). Computational models for System-on-Chip (SoC). System-level specification and description languages and execution semantics. Concepts, requirements, examples. SoC modeling at different levels of abstraction. Modeling of IP (intellectual property), design constraints, test benches. Simulation semantics and algorithms. Co-simulation methodology.

EECS222B System-on-Chip Design and Exploration (3). System-on-Chip design flow and methodology. Design space exploration. Co-design of hardware and software, hardware/software partitioning. System-on-Chip architecture exploration and synthesis. On-chip network and communication design and synthesis. On-chip software/hardware interface generation. Prerequisite: EECS222A or consent of instructor.

EECS222C System-on-Chip Software Synthesis (3). System-on-Chip software concepts, requirements, examples for engineering applications including automotive and communication. Software synthesis methodology. Algorithmic specification, design constraints. Applications using embedded operating systems. Static, dynamic, scheduling. Input/output, interrupt handling. Code generation, retargetable compilation. Instruction set simulation. Debugging and prototyping. Prerequisite: EECS222A or consent of instructor.

EECS222D System-on-Chip Hardware Synthesis (3). Hardware IP specification. Cycle-accurate languages and modeling. Target architectures, data path, and control unit. Design tasks and design methodology. Behavioral synthesis. Resource allocation, operation scheduling, binding. Communication protocol and interface synthesis. Arbiter, transducer, controller design and synthesis. Net list generation. Prerequisite: EECS222A or consent of instructor.

EECS223 Real-Time Computer Systems (3). Time bases, clock synchronization, real-time communication protocols, specification of requirements, task scheduling. Validation of timelines, real-time configuration management. Prerequisites: EECS211 and EECS213.

EECS224 Fault-Tolerant Computing (4). Various aspects of fault-tolerant computing systems. Includes hardware and software failures, reliability, and mechanism to recover from failures. Prerequisite: EECS211.

EECS225 Advanced Data Engineering (3). Advanced data models, data analysis, intelligence and integration, distributed database management systems, parallel databases, multimedia and visual databases, Web database management, advanced database applications. Prerequisite: EECS116 or Computer Science 122A.

EECS240 Random Processes (3). Extensions of probability theory to random variables varying with time. General properties of stochastic processes. Convergence. Estimation, including nonlinear and linear minimum mean square error and maximum likelihood. Spectral density and linear filters. Poisson processes and discrete-time Markov chains. Prerequisite: EECS140.

EECS241A Digital Communications I (3). Concepts and applications of digital communication systems. Baseband digital transmission of binary, multiamplitude, and multidimensional signals. Introduction to and performance analysis of different modulation schemes.

EECS241B Digital Communications II (3). Concepts and applications of equalization, multicarrier modulation, spread spectrum, and CDMA. Digital communications through fading memory channels. Prerequisite: EECS241A.

EECS242 Information Theory (3). Fundamental capabilities and limitations of information sources and information transmission systems. An analytical framework for modeling and evaluating communication systems: entropy, mutual information asymptotic equipartition property, entropy rates of a stochastic process, data compression, channel capacity, differential entropy, the Gaussian channel. Prerequisite: EECS240.

EECS243 Error Correcting Codes (3) S. Different techniques for error correcting codes and analyzing their performance. Linear block codes; cyclic codes; convolutional codes. Minimum distance; optimal decoding; Viterbi decoding; bit error probability. Coding gain; trellis coded modulation. Prerequisite: EECS240.

EECS244 Wireless Communications (3). Introduction to wireless communications systems. Wireless channel modeling. Single carrier, spread spectrum, and multi-carrier wireless modulation schemes. Diversity techniques. Multiple-access schemes. Transceiver design and system level tradeoffs. Brief overview of GSM, CDMA (IS-95) and 2.5, 3G cellular schemes. Prerequisite: EECS241B.

EECS245 Space-Time Coding (3). A fundamental study of: capacity of MIMO channels, space-time code design criteria, space-time block codes, space-time trellis codes, differential detection for multiple antennas, spatial multiplexing, BLAST. Prerequisite: EECS242.

EECS246 Network Coding: Theory and Applications (3). Theoretical frameworks for network coding: linear, algebraic, and random network coding; linear programming and combinatorial frameworks. Network code design. Benefits and costs. Practical network coding. Applications to wireless networks, content distribution, security, and other areas. Prerequisites: EECS248A/Networked Systems 201/Computer Science 232 and an introductory course in linear algebra. Same as Networked Systems 256.

EECS248A Internet (4) F. A broad overview of basic Internet concepts. Internet architecture and protocols, including addressing, routing, TCP/IP, quality of service, and streaming. Prerequisite: EECS148, Computer Science 132, or consent of instructor. Same as Computer Science 232 and Networked Systems 201.

EECS248B Performance Analysis of Computer Communication Networks (3) W. Mathematical modeling and optimization of network performance and design. Data link layer and media access protocols. Queuing models for communication networks. Routing and congestion control. Prerequisite: EECS248A. Same as Networked Systems 250.

EECS250 Digital Signal Processing I (3). Fundamental principles of digital signal processing, sampling, decimation and interpolation, discrete Fourier transforms and FFT algorithms, transversal and recursive filters, discrete random processes, and finite-word effects in digital filters. Prerequisites: EECS152A or equivalent.

EECS251A-B Detection, Estimation, and Demodulation Theory (3-3). Fundamentals of hypothesis testing and Bayes and Maximum Likelihood Estimation. ARMA and state variable models for random time series analysis. Wiener and Kalman filtering and prediction. Adaptive algorithms for identification and tracking of parameters of time-varying models. Prerequisite: EECS240.

EECS260A Linear Systems I (3). State-space representation of continuous-time and discrete-time linear systems. Controllability, observability, stability. Realization of rational transfer functions. Prerequisite: EECS160A or equivalent.

EECS261A Linear Optimization Methods (3). Formulation, solution, and analysis of linear programming and linear network flow problems. Simplex methods, dual ascent methods, interior point algorithms and auction algorithms. Duality theory and sensitivity analysis. Shortest path, max-flow, assignment, and minimum cost flow problems. Prerequisite: Mathematics 2J or consent of instructor.

EECS267A Industrial and Power Electronics (4) W. Power switching devices, pulse width modulation (PWM) methods, switching converter topologies, control, and magnetics. Prerequisite: EECS170C, EECS160A, or consent of instructor. Concurrent with EECS166A.

EECS267B Topics in Industrial and Power Electronics (3). Practical design of switching converters, electromagnetic compatibility, thermal management, and/or control methods. Prerequisite: EECS267A or consent of instructor.

EECS270A Advanced Analog Integrated Circuit Design I (3). Basic transistor configurations; differential pairs; active load/current sources; supply/temperature-independent biasing; op-amp gain and output stages; amplifier frequency response and stability compensation; nonidealities in op-amps; noise and dynamic range in analog circuits. Prerequisites: EECS170C and 170LC, or equivalent; or consent of instructor.

EECS270B Advanced Analog Integrated Circuit Design II (3) W. Advanced transistor modeling issues; discrete-time and continuous-time analog Integrated Circuit (IC) filters; phase-locked loops; design of ICs operating at radio frequencies; low-voltage/low-power design techniques; A/D and D/A converters; AGC circuits. Prerequisite: EECS270A or consent of instructor.

EECS270C Design of Integrated Circuits for Broadband Applications (3) S. Topics include: broadband standards and protocols; high-frequency circuit design techniques; PLL theory and design; design of transceivers; electrical/optical interfaces. Prerequisite: EECS 270A or consent of instructor.

EECS270D Radio-Frequency Integrated Circuit Design (3) S. Topics include: RF component modeling; matching network design; transmission line theory/modeling; Smith chart and S-parameters; noise modeling of active and passive components; high-frequency amplifier design; low-noise amplifier (LNA) design; mixer design; RF power amplifier. Prerequisite: EECS270A or consent of instructor.

EECS272 Topics in Electronic System Design (3). New research results in electronic system design. May be repeated for credit.

EECS273 Electronics Packaging (3) Materials, processes, techniques, and principles in interconnect and packaging of electronic products after the device-containing semiconductor wafer is fabricated. The electronic, optical, thermal, mechanical, and reliability properties of the materials are evaluated in the context of modern electronics manufacturing processes. Prerequisite: consent of the instructor.

EECS274 Biomedical Microdevices (MEMOS) (3). Construction, lithographic patterning and etching, sealing and connecting, molding, and testing of microdevices. Prerequisite: EECS179 or consent of instructor.

EECS275A Very Large Scale Integration (VLSI) Project (4) S. Students create VLSI design projects from conception through architecture, floor planning, detailed design, simulation, verification, and submission for project fabrication. Emphasis on practical experience in robust VLSI design techniques. (Successful students are expected to take EECS275B.) Prerequisite: EECS170D, EECS115, or consent of instructor. Concurrent with EECS175A.

EECS275B Very Large Scale Integration (VLSI) Project Testing (4) F. Test and document student-created Complementary Metal Oxide Semiconductor (CMOS) Very Large Scale Integration (VLSI) projects designed in EECS275A. Emphasis on practical laboratory experience in VLSI testing techniques. Prerequisite: EECS275A or consent of instructor.

EECS277A Advanced Semiconductor Devices I (3) W. Advanced complementary metal-oxide-semiconductor field-effect transistors (CMOSFET), device scaling, device modeling and fabrication, equivalent circuits, and their applications for digital, analog, RF. Prerequisite: EECS174.

EECS277B Advanced Semiconductor Devices II (3) S. Metal-semiconductor field-effect transistors (MESFET), heterojunction bipolar transistors (HBT), microwave semiconductor devices, equivalent circuits, device modeling and fabrication, microwave amplifiers, transmitters, and receivers. Prerequisite: EECS174.

EECS277C Nanotechnology (3). Fabrication and characterization techniques of electrical circuit elements at the nanometer scale. Quantized conductance, semiconductor quantum dots, single electron transistors, molecular wires, carbon nanotubes, self-assembly of nano-circuit elements, quantum methods of information processing. Prerequisites: EECS170A and Physics 51A; or consent of instructor.

EECS278 Micro-System Design (4) W. Covers the fundamentals of the many disciplines needed for design of Micro-Electro-Mechanical Systems (MEMS): microfabrication technology, structural mechanics on micro-scale, electrostatics, circuit interface, control, computer-aided design, and system integration. Same as MAE247.

EECS279 Micro-Sensors and Actuators (4) S. Introduction to the technology of Micro-Electro-Mechanical Systems (MEMS). Fundamental principles and applications of important microsensors, actuation principles on micro-scale. Introduction to the elements of signal processing; processing of materials for micro sensor/actuator fabrication; smart sensors and microsensor/microactuator array devices. Same as MAE249.

EECS280A Advanced Engineering Electromagnetics I (3). Stationary electromagnetic fields, Maxwell's equations, circuits and transmission lines, plane waves, guided waves, and radiation. Prerequisite: EECS180 or equivalent.

EECS280B Advanced Engineering Electromagnetics II (3) W. Two- and three-dimensional boundary value problems, dielectric waveguides and other special waveguides, microwave networks and antenna arrays, electromagnetic properties of materials, and electromagnetic optics. Prerequisite: EECS280A or equivalent.

EECS282 Monolithic Microwave Integrated Circuit (MMIC) Analysis and Design II (3) S. Design of microwave amplifiers using computer-aided design tools. Covers low-noise amplifiers, multiple stage amplifiers, broadband amplifiers, and power amplifiers. Hybrid circuit design techniques including filters and baluns. Theory and design rules for microwave oscillator design. Prerequisite: EECS 180, EECS182, or consent of instructor.

EECS285A Optical Communications (3). Introduction to fiber optic communication systems, optical and electro-optic materials, and high-speed optical modulation and switching devices. Prerequisite: EECS180 or consent of instructor.

EECS285B Lasers and Photonics (3) W. Covers the fundamentals of lasers and applications, including Gaussian beam propagation, interaction of optical radiation with matters, and concepts of optical gain and feedback. Applications are drawn from diverse fields of optical communication, signal processing, and material diagnosis. Prerequisite: undergraduate course work in electromagnetic theory and atomic physics.

EECS292 Preparation for M.S. Comprehensive Examination (1 to 3) F, W, S. Individual reading and preparation for the M.S. comprehensive examination. Satisfactory/Unsatisfactory only. May be repeated for credit.

EECS293 Preparation for Ph.D. Preliminary Examination (1 to 6) F, W, S. Individual reading and preparation for the Ph.D. preliminary examination. Satisfactory/Unsatisfactory only. May be repeated for credit.

EECS294 Electrical Engineering and Computer Science Colloquium (1 to 4) F, W, S. Invited speakers discuss their latest research results in electrical engineering and computer science. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

EECS295 Seminars in Engineering (1 to 4) F, W, S. Scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor. May be repeated for credit.

EECS296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

EECS297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in preparing and completing the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

EECS298 Topics in Electrical Engineering and Computer Science (3) F, W, S. Study of Electrical and Computer Engineering concepts. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

EECS299 Individual Research (1 to 12) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

S4221 Engineering Gateway; (949) 824-8451, 5406
Derek Dunn-Rankin, **Department Chair**

Faculty

Satya N. Atluri: Continuum mechanics, computational mechanics, meshless methods, damage tolerance and structural integrity, computational nanoscience and technology

James E. Bobrow: Robotics, applied nonlinear control, optimization methods

Haris J. Catrakis: Turbulence and the dynamics of flows, theories, mathematical models, variational principles, computing, direct numerical and large-eddy simulations, imaging, optimal flows, multiscale flows

Donald Dabdub: Mathematical modeling of urban and global air pollution, dynamics of atmospheric aerosols, secondary organic aerosols, impact of energy generation on air quality, chemical reactions at gas-liquid interfaces

Derek Dunn-Rankin: Combustion, optical particle sizing, particle aerodynamics, laser diagnostics and spectroscopy

Said E. Elghobashi: Direct numerical simulation of turbulent, chemically reacting and dispersed two-phase flows

Carl A. Friehe *(Emeritus)*: Boundary-layer meterology, atmospheric turbulence, air-sea energy exchange

Manuel Gamero-Castaño: Electric propulsion, electrospray, atomization, aerosol diagnostics

Faryar Jabbari: Robust and nonlinear control theory, adaptive parameter identification

John C. LaRue: Fluid mechanics, micro-electrical-mechanical systems (MEMS), turbulence, heat transfer, instrumentation

Feng Liu: Computational fluid dynamics and combustion, aerodynamics, aeroelasticity, propulsion, turbomachinery aerodynamics and aeromechanics

Marc J. Madou: Fundamental aspects of micro/nano-electro-mechanical systems (MEMS/NEMS), biosensors, nanofluidics, biomimetics

J. Michael McCarthy: Machine design and kinematic synthesis of spatial mechanisms and robots

Kenneth D. Mease: Flight guidance and control, nonlinear dynamical systems

Dimitri Papamoschou: Compressible mixing and turbulence, jet noise reduction, diagnostics for compressible flow, acoustics in moving media

Roger H. Rangel: Fluid dynamics and heat transfer of multiphase systems including spray combustion, atomization, and metal spray solidification; applied mathematics and computational methods

David J. Reinkensmeyer: Robotics, mechatronics, biomedical engineering, rehabilitation, biomechanics, neural control of movement

G. Scott Samuelsen: Energy, fuel cells, hydrogen economy, propulsion, combustion and environmental conflict; turbulent transport in complex flows, spray physics, NOx and soot formation, laser diagnostics and experimental methods; application of engineering science to practical propulsion and stationary systems; environmental ethics

William E. Schmitendorf *(Emeritus)*: Control theory and applications

Andrei M. Shkel: Design and advanced control of micro-electro-mechanical systems (MEMS); precision micro-sensors and actuators for telecommunication and information technologies; MEMS-based health monitoring systems, disposable diagnostic devices, prosthetic implants

Athanasios Sideris: Robust and optimal control theory and design, neural networks, learning systems and algorithms

William A. Sirignano: Combustion theory and computational methods, multiphase flows, high-speed turbulent reacting flows, flame spread, microgravity combustion, miniature combustors, fluid dynamics, applied mathematics

Lorenzo Valdevit: Multifunctional sandwich structures, thermal protection systems, morphing structures, active materials, MEMS, electronic packaging, cell mechanics

Benjamin F. Villac: Spaceflight dynamics, navigation and control, validated computational methods

Yun Wang: Fuel cells, computational modeling, thermo-fluidics, two-phase flows, electrochemistry, Computational Fluid Dynamics (CFD), turbulent combustion

Affiliated Faculty

Jacob Brouwer: Fuel cell thermodynamic and dynamic modeling; integrated high-temperature fuel cell systems, solid oxide fuel cell materials synthesis and testing; fuel processing; renewable energy

Daniel D. Joseph: Fluid dynamics of miscible fluids, irrotational motions of viscous and viscoelastic liquids, cavitation induced by viscous stresses, flow induced microstructures in solid liquid flows, rheological and flow properties of polymer solutions seeded with silica nanoparticles

Joyce H. Keyak: Orthopaedic surgery

Abraham Lee: Micro-electro-mechanical systems (MEMS), microfluidics, catheter-based microsurgical devices, microactuators for medical and optical applications, microfabrication processes, directed nanoscale self-assembly for biomolecular transducers

Robert H. Liebeck: Aircraft design

Vincent G. McDonell: Droplet transport; measurement, simulation, control, and analysis of liquid spray and gas fired combustion systems; alternative fuels

Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between properties of materials and their microstructure, mechanical behavior at the nanoscale

William Randall Seeker: Energy systems, air pollution formation and control processes and technology, chemical; kinetics, combustion science, emissions monitoring, experimental combustion diagnostics

Edriss Titi: Partial differential equations, nonlinear analysis

Frederic Yui-Ming Wan: Applied mathematics

Affiliated faculty are from the Schools of Physical Sciences and Medicine and The Henry Samueli School of Engineering.

The Department of Mechanical and Aerospace Engineering offers two undergraduate B.S. degree programs: one in Mechanical Engineering and the other in Aerospace Engineering. M.S. and Ph.D. degree programs in Mechanical and Aerospace Engineering are also offered.

Mechanical engineers design, manufacture, and control machines ranging from robots to aircraft and spacecraft, design engines and power plants that drive these machines, analyze the environmental impact associated with power generation, and strive to promote environmental quality. To achieve their goals, mechanical engineers use mathematics, physics, and chemistry together with engineering science and technology in areas such as fluid mechanics, heat transfer, dynamics, controls, and atmospheric science. Mechanical Engineering students at UCI learn the problem-solving, modeling, and testing skills required to contribute to advances in modern technology.

Mechanical Engineering undergraduates complete required courses that provide engineering fundamentals and technical electives that allow students to study particular areas of interest. Specializations are available in Aerospace Engineering, Energy Systems and Environmental Engineering, Flow Physics and Propulsion Systems, and Design of Mechanical Systems. Independent research opportunities allow students to pursue other avenues for focusing their studies.

Aerospace Engineering deals with all aspects of aircraft and spacecraft design and operation, thus requiring the creative use of many different disciplines. Aerospace engineers work on the forefront of technological advances and are likely to be leaders in scientific discoveries.

The undergraduate curriculum in Aerospace Engineering includes courses in subsonic and supersonic aerodynamics, propulsion, controls and performance, light-weight structures, spacecraft dynamics, and advanced materials. In the senior capstone course, students work in teams on the preliminary design of a commercial jet transport.

Career opportunities for Aerospace Engineering graduates are in the broad range of aerospace industries, including manufacturers of aircraft, spacecraft, engines, and aircraft/spacecraft components; makers of aircraft/spacecraft simulators; and government research laboratories.

Undergraduate Major in Aerospace Engineering

Program Educational Objectives: graduates of the program will have the professional and scientific education that allows them to be successful as career engineers and in the most demanding graduate programs. Specifically, they will be able to (1) function in professional environments in industry, government, and academia applying and building upon engineering science knowledge, problem-solving skills, and communication skills; (2) function as members of teams and in leadership roles applying ethical standards including the AIAA code of ethics within and beyond traditional Aerospace Engineering disciplines; and (3) remain current with technology and contemporary scientific and societal issues, and consequently improve skills and knowledge through a lifelong process of learning. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

The undergraduate Aerospace Engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas constitute much of the remaining curriculum. A few technical electives allow the undergraduate student to specialize somewhat or to pursue broader understanding. A senior capstone design experience culminates the curriculum.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one course in general chemistry (with laboratory), and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN AEROSPACE ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E; Chemistry 1A and 1LE; Physics 7B/7LB or Physics 7C/7LC; Physics 7D-E and 7LD; Physics 52A; and one course from Biological Sciences 93, Chemistry 1B, Earth System Science 25, 55, or Physics 51A.

Engineering Topics Courses: Students must complete a minimum of 24 units of engineering design.

Core Courses: Engineering ENGR54, EECS70A, MAE10, MAE30, MAE80, MAE91, MAE106, MAE108, MAE112, MAE120, MAE130A, MAE130B, MAE135, MAE136, MAE140, MAE146, MAE150, MAE150L, MAE157, MAE158, MAE159, MAE170, and MAE175.

Engineering Elective Courses: Students select, with the approval of a faculty advisor, a minimum of 8 units of engineering electives, incorporating at least 1 unit of design.

Engineering Professional Topics Course: Economics 23.

At most an aggregate total of 4 units of 199 or H199 courses may be used to satisfy degree requirements.

(The nominal Aerospace Engineering program will require 189 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary.)

Design unit values are indicated at the end of each course description. The faculty advisors and the Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements. Selection of elective courses must be approved by the student's faculty advisor and the departmental undergraduate advisor.

PROGRAM OF STUDY

Sample Program of Study — Aerospace Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
MAE10	Physics 7C, 7LC	Physics 7D, 7LD
Chemistry 1A	Chemistry 1LE	Basic Science
General Education	General Education	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E, 52A	MAE80	MAE91
MAE30	ENGR54	EECS70A
General Education	General Education	
Junior		
MAE130A	MAE130B	MAE106
MAE140	MAE146	MAE120
MAE150	MAE 157	MAE135
MAE150L	General Education	General Education
General Education		
Senior		
MAE108	MAE112	MAE159
MAE136	MAE158	MAE175
MAE170	Technical Elective	Technical Elective
General Education	General Education	General Education

The sample program of study chart shown is typical for the major in Aerospace Engineering. This program is based upon a set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Aerospace Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisor.

Undergraduate Major in Mechanical Engineering

Program Educational Objectives: graduates of the program will have the professional and scientific education that allows them to be successful as career engineers and in the most demanding graduate programs. Specifically, they will be able to (1) function in professional environments in industry, government, and academia applying and building upon engineering science knowledge, problem-solving skills, and communication skills; (2) function as members of teams and in leadership roles applying ethical standards including the ASME code of ethics within and beyond traditional Mechanical Engineering disciplines; and (3) remain current with technology and contemporary scientific and societal issues, and consequently improve skills and knowledge through a lifelong process of learning. (Program educational objectives are those aspects of engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

The undergraduate Mechanical Engineering curriculum includes a foundation of mathematics, physics, and chemistry. Engineering courses in fundamental areas constitute much of the remaining curriculum. A few technical electives allow the undergraduate student to specialize somewhat or to pursue broader understanding. A senior capstone design experience culminates the curriculum.

ADMISSIONS

High School Students: See page 196.

Transfer Students. Preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following **required** courses: one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one course in general chemistry (with laboratory), and two additional approved courses for the major.

Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer. Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact The Henry Samueli School of Engineering at (949) 824-4334.

REQUIREMENTS FOR THE B.S. DEGREE IN MECHANICAL ENGINEERING

University Requirements: See pages 55–62.

School Requirements: See page 197.

Major Requirements:

Mathematics and Basic Science Courses: Mathematics 2A-B, 2D, 2J, 3D, and 2E; Chemistry 1A and 1LE; Physics 7B/7LB or Physics 7C/7LC; Physics 7D-E and 7LD; Physics 52A; and one course from Biological Sciences 93, Chemistry 1B, Earth System Science 25, 55, or Physics 51A.

Engineering Topics Courses: Students must complete a minimum of 24 units of engineering design.

Core Courses: Engineering ENGR54; EECS70A; MAE10; MAE30; MAE52; MAE80; MAE91; MAE106; MAE107; MAE108 or MAE180 or CBEMS164; MAE115; MAE120; MAE130A; MAE130B; MAE140; MAE145; MAE147; MAE150; MAE150L; MAE151; MAE155 or MAE156 or MAE157; MAE170; and a minimum of 3 units of MAE189.

Engineering Elective Courses: Students select, with the approval of a faculty advisor, a minimum of 12 units of engineering topics courses. Students may select an area of specialization and complete the associated requirements, as shown below.

Engineering Professional Topics Course: Economics 23.

At most an aggregate total of 4 units of 199 or H199 courses may be used to satisfy degree requirements.

(The nominal Mechanical Engineering program will require 192 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary.)

Specialization in Aerospace Engineering: Completion of a Senior Design Project in this area, MAE108, and two courses selected from Engineering MAE112, MAE135, MAE136, MAE158, MAE159, and MAE175.

Specialization in Energy Systems and Environmental Engineering: Completion of a Senior Design Project in this area and one course selected from Engineering MAE110 or MAE117, and one course selected from MAE164, CEE162, CEE168, CEE173, or CBEMS110.

Specialization in Flow Physics and Propulsion Systems: Completion of a Senior Design Project in this area and two courses selected from Engineering MAE110, MAE112, MAE135, MAE164, MAE185.

Specialization in Design of Mechanical Systems: Completion of a Senior Design Project in this area and two courses selected from Engineering MAE152, MAE171, MAE172, MAE180, MAE183, MAE188.

Design unit values are indicated at the end of each course description. The faculty advisors and the Student Affairs Office can provide necessary guidance for satisfying the design requirements. Selection of elective courses must be approved by the student's faculty advisor and the departmental undergraduate advisor.

PROGRAM OF STUDY

The sample program of study chart shown is typical for the accredited major in Mechanical Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Mechanical Engineering majors must consult at least once every year with the academic counselors in the Student Affairs Office and with their faculty advisors.

Sample Program of Study — Mechanical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
MAE10	General Education	Physics 7D, 7LD
General Education	Physics 7C, 7LC	Basic Science
Chemistry 1A	Chemistry 1LE	
Sophomore		
Mathematics 2J	Mathematics 3D	Mathematics 2E
Physics 7E, 52A	MAE80	MAE52
MAE30	ENGR54	MAE91
General Education	General Education	EECS70A
Junior		
MAE130A	MAE130B	MAE106
MAE140	MAE147	MAE120
MAE150	MAE156 or 157	MAE145
MAE150L	General Education	General Education
General Education		
Senior		
MAE107	MAE151	MAE189
MAE115,	MAE180	General Education
MAE170	Technical Elective	Technical Elective
General Education	General Education	Technical Elective

MAE155 may be used instead of MAE156 or MAE157. Students can dual major in Mechanical Engineering and Aerospace Engineering by satisfying the degree requirements for both majors. The ME and AE dual majors may use MAE159 to satisfy the MAE189 requirement; and they should use MAE108 as a Mechanical Engineering Core Course. Students who dual major in Mechanical Engineering and Materials Science Engineering should use CBEMS164 as a Mechanical Engineering Core Course.

Graduate Study in Mechanical and Aerospace Engineering

The Mechanical and Aerospace Engineering faculty have special interest and expertise in four thrust areas: continuum mechanics; power, propulsion, and environment; micro/nanomechanics; and systems and design.

Continuum mechanics faculty study the physics of fluids, physics and chemistry of solids, and structural mechanics. Areas of emphasis in fluid mechanics include incompressible and compressible turbulent flows, multiphase flows, chemically reacting and other nonequilibrium flows, aeroacoustics, aerooptics, and fluid-solid interaction. In the field of solid mechanics, research and course work emphasize theoretical and computational approaches which contribute to a basic understanding of and new insight into the properties and behavior of condensed matter. General areas of interest are large-strain and large-rotation inelastic solids, constitutive modeling, and fracture mechanics. Computational algorithms

center on boundary element methods and the new class of meshless methods. Studies in structural mechanics involve the analysis and synthesis of low-mass structures, smart structures, and engineered materials, with emphasis on stiffness, stability, toughness, damage tolerance, longevity, optimal life-cycle costs and self-adaptivity.

Research in power, propulsion, and environment encompasses aerospace propulsion, combustion and thermophysics, fuel cell technologies, and atmospheric physics and impacts. In aerospace propulsion, particular emphasis is placed in the areas of turbomachinery, spray combustion, combustion instability, innovative engine cycles, and compressible turbulent mixing. The topic of combustion and thermophysics addresses the fundamental fluid-dynamical, heat-transfer, and chemical mechanisms governing combustion in diverse settings. Fuel cell research encompasses the development of fuel-cell technology, hybrid engines, and thermionic devices. Activities cover the thermodynamics of energy systems, the controls associated with advanced energy systems, and systems analyses. The area of atmospheric physics and impacts deals with the modeling and controlling of chemical pollution, particle dispersion, and noise emission caused by energy-generation and propulsion devices. Research on atmospheric turbulence addresses the energy exchanges between the Earth's land and ocean surfaces and the overlying atmosphere.

Micro/nanomechanics encompasses the thrusts of miniaturization engineering, mechatronics, and biotechnology. Miniaturization engineering is relevant to the development of small-scale mechanical, chemical and biological systems for applications in biotechnology, automotive, robotic, and alternative energy applications. It involves the establishment of scaling laws, manufacturing methods, materials options and modeling from the atom to the macro system. Mechatronic design is the integrated and optimal design of a mechanical system and its embedded control system. Main focus research is the design, modeling, and characterization of Micro Electro Mechanical Systems (MEMS). Particular emphasis is placed on analysis and design of algorithmic methods and physical systems that realize sensor-based motion planning. The thematic area of biotechnology involves the understanding, modeling, and application of fundamental phenomena in mechanical engineering, electrical engineering, and chemistry towards the development of bio-sensors and actuators.

Systems and design research is conducted in the areas of dynamic systems optimization and control, biomechanical engineering, robotics and machine learning, and design engineering. Advanced concepts in dynamics, optimization and control are applied to the areas of biorobotics, flight trajectory design, guidance and navigation, learning systems, micro sensors and actuators, flexible structures, combustion, fuel cells, and fluid-optical interactions. Biomechanical engineering integrates physiology with engineering in order to develop innovative devices and algorithms for medical diagnosis and treatment. The focus of robotics and machine learning is the creation of machines with human-like intelligence capabilities for learning. Faculty in design engineering develop methodologies to address issues ranging from defining the size and shape of components needed for force and motion specifications, to characterizing performance in terms of design parameters, cost and complexity.

Aerospace engineering research efforts combine specialties from each of the four thrust areas toward the design, modeling, and operation of complex systems.

The Department offers the M.S. and Ph.D. degrees in Mechanical and Aerospace Engineering.

MASTER OF SCIENCE DEGREE

Two plans are available to pursue study toward the M.S. degree: a thesis option and a comprehensive examination option. Opportunities are available for part-time study toward the M.S. degree. The Plan of Study for both options must be developed in consultation with a Faculty Advisor and approved by the Department Graduate Advisor.

Plan I: Thesis Option

The thesis option requires completion of 47 units of study; the completion of an original research project with a Faculty Advisor, the writing of the thesis describing it; and approval of the thesis by a thesis committee. This plan is available for those who wish to gain research experience or as preparation for study toward the doctoral degree. Students must complete eight courses numbered MAE200–289, 12 units of MAE296, and 3 units of MAE298. Six of the required courses have to be taken from a restricted list of courses depending on the student's selection of thrust area in his/her M.S. plan of study. With the approval of the graduate advisor, two courses in MAE200–289 may be replaced by graduate technical electives in other departments and one senior-level technical elective (non-required) undergraduate course in MAE may be used to replace a course numbered 200–289.

NOTE: Students who enter prior to fall of 2008 should follow the course requirements outlined within the *Catalogue* of the year they entered. The change in number of units per course is not intended to change the course requirements for the degree or to have any impact in the number of courses students are taking. As such, students will need to continue to meet the same high standards and plan of study requirements as previously required. Students will work with their advisor to create a plan of study encompassing the equivalent topical requirements, as well as the equivalent number of courses to the previous 36 unit requirement (i.e., at least 8 graduate-level courses to meet the 24, 200–289 level unit requirement).

Plan II: Comprehensive Examination Option

The comprehensive examination option requires completion of 47 units of study. Students must complete eleven courses numbered MAE200–289 and 3 units of MAE298. Six of the required courses have to be taken from a restricted list of courses depending on the student's selection of thrust area in his/her M.S. plan of study. Up to 8 units in the MAE200–289 range may be replaced by an equal number of units of MAE294, which includes execution and documentation of a research or design project under a faculty advisor. With the approval of the graduate advisor, two courses in MAE200–289 may be replaced by graduate technical electives in other departments and one senior-level technical elective (non-required) undergraduate course in MAE may be used to replace a course numbered 200–289.

NOTE: Students who entered prior to fall of 2008 should follow the course requirements outlined within the *Catalogue* of the year they entered. The change in number of units per course is not intended to change the course requirements for the degree or to have any impact in the number of courses students are taking. As such, students will need to continue to meet the same high standards and plan of study requirements as previously required. Students will work with their advisor to create a plan of study encompassing the equivalent topical requirements, as well as the equivalent number of courses to the previous 36 unit requirement (i.e., at least 11 graduate-level courses to meet the 33, 200–289 level unit requirement).

DOCTOR OF PHILOSOPHY DEGREE

The doctoral program in Mechanical and Aerospace Engineering is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with a faculty advisor who takes into consideration the objectives and preparation of the candidate.

Within this flexible framework the Department maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Departmental Ph.D. guidelines for program details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty; completion of six non-research graduate, technical courses beyond M.S. degree requirements; passage of a preliminary examination or similar assessment of the student's background and potential for success in the doctoral program; course work; meeting departmental teaching requirements, which can be satisfied through service as a teaching assistant or equivalent; research preparation; formal advancement to candidacy in the third year (second year for students who entered with a master's degree) through a qualifying examination conducted on behalf of the Irvine division of the Academic Senate; development of a research proposal; completion of a significant research investigation, and completion and defense of an acceptable dissertation. There is no foreign language requirement. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. Students enrolled in the Ph.D. program must take a full-time load (minimum of 12 units). The normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years.

Before seeking admission, Ph.D. applicants are encouraged to communicate directly and in some detail with prospective faculty sponsors. The student's objectives and financial resources must coincide with a faculty sponsor's research interests and research support. Financial aid in the form of a teaching assistantship or fellowship may not cover the period of several years required to complete the program. During the balance of the period the student will be in close collaboration with the faculty research advisor.

Courses in Mechanical and Aerospace Engineering

***(Schedule of Classes* designation: EngrMAE)**

LOWER-DIVISION

NOTE: The undergraduate courses listed below are open only to students in The Henry Samueli School of Engineering. All other majors must petition for permission to enroll.

MAE10 Introduction to Engineering Computations (4) F. Introduction to the solution of engineering problems through the use of the computer. Elementary programming in FORTRAN and Matlab is taught. No previous knowledge of computer programming is assumed. Prerequisite or corequisite: Mathematics 2A. Only one course from Engineering MAE10, ENGR10, EECS10, and EECS12 may be taken for credit. (Design units: 1)

MAE30 Statics (4) F, Summer. Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 7A. Same as ENGR30 and CEE30. (Design units: 0)

MAE52 Computer-Aided Design (4) S. Develops skills for interpretation and presentation of mechanical design drawings and the use of CAD in engineering design. An integrated approach to drafting based on sketching, manual drawing, and three-dimensional CAD techniques is presented. (Design units: 0.5)

MAE57 Manufacturing Processes in Engineering (2). With laboratory. Machines and processes of mechanical manufacturing. Safety and professional procedures emphasized. Use of measuring instruments, hand tools, lathe, mill, drill press, bandsaw, grinder, welding equipment. Pass/Not Pass only. (Design units: 0)

MAE80 Dynamics (4) W, Summer. Introduction to the kinetics and dynamics of particles and rigid bodies. The Newton-Euler, Work/Energy, and Impulse/Momentum methods are explored for ascertaining the dynamics of particles and rigid bodies. An engineering design problem using these fundamental principles is also undertaken. Prerequisites: Mathematics 2D and Physics 7C. Same as ENGR80 and CEE80. (Design units: 0.5)

MAE91 Introduction to Thermodynamics (4) S, Summer. Thermodynamic principles; open and closed systems representative of engineering problems. First and second law of thermodynamics with applications to engineering systems and design. Prerequisites: Physics 7C, Mathematics 2D. Only one course from MAE91, CBEMS40B, and CBEMS45B may be taken for credit. (Design units: 0.5)

UPPER-DIVISION

MAE106 Mechanical Systems Laboratory (4) S. Experiments in linear systems, including op-amp circuits, vibrations, and control systems. Emphasis on demonstrating that mathematical models can be useful tools for the analysis and design of electro-mechanical systems. Prerequisites: MAE140 and EECS70A. (Design units: 2)

MAE107 Fluid Thermal Science Laboratory (4) F. Fluid and thermal engineering laboratory. Experimental analysis of fluid flow, heat transfer, and thermodynamic systems. Probability, statistics, and uncertainty analysis. Report writing is emphasized and a design project is required. Corequisite: MAE120. (Design units: 1)

MAE108 Aerospace Laboratory (4) F. Analytical and experimental investigation in aerodynamics, fluid dynamics, and heat transfer. Emphasis on study of flow over objects and lift and drag on airfoils. Introduction to basic diagnostic techniques. Report writing is emphasized and a design project is required. Prerequisite: MAE130B. (Design units: 2)

MAE110 Combustion and Fuel Cell Systems (4). Fundamentals of gaseous, liquid, and coal-fired combustion and fuel cell systems. Fuels, fuel-air mixing, aerodynamics, and combustion and fuel cell thermodynamics. Operating and design aspects of practical systems including engines, power generators, boilers, furnaces, and incinerators. Prerequisite: MAE115. (Design units: 2)

MAE112 Propulsion (4) W. Application of thermodynamics and fluid mechanics to basic flow processes and cycle performance in propulsion systems: gas turbines, ramjets, scramjets, and rockets. Prerequisite: MAE135. (Design units: 1)

MAE113 Electric Propulsion (4) S. Space propulsion requirements and maneuvers, stressing those best suited to electric propulsion. An introduction to plasma physics. Electrothermal, electromagnetic and electrostatic accelerators, with emphasis in technologies (ion engines, Hall thrusters and colloidal thrusters) belonging to the latter family. Prerequisite: MAE112. Concurrent with MAE213.

MAE115 Applied Engineering Thermodynamics (4) F. Application of thermodynamic principles to compressible and incompressible processes representative of practical engineering problems—power cycles, refrigeration cycles, multicomponent mixtures, air conditioning systems, combustion and compressible flow. Design of a thermodynamic process. Prerequisite: MAE91. MAE115 and CBEMS45C may not both be taken for credit. (Design units: 2)

MAE117 Solar and Renewable Energy Systems (4). Basic principles, design, and operation of solar and other renewable energy systems including solar photo-voltaic, solar thermal, hydroelectric, wind, and biomass gasification and combustion. Includes power generation and storage, and renewable fuels for transportation and stationary power generation. Prerequisite: MAE115. (Design units: 1)

MAE118 Sustainable Energy Systems (4). Basic principles, design, and operation of sustainable energy systems including wind, solar photo-voltaic and thermal, hydroelectric, geothermal, oceanic, biomass combustion, advanced coal, and next generation nuclear. Includes power generation, storage, and transmission for stationary power generation. Prerequisite: MAE115. Concurrent with MAE218. (Design units: 1)

MAE120 Heat Transfer (4) S. Fundamentals of heat transfer. Conduction, convection in laminar and turbulent flow, radiation heat transfer, and combined heat transfer. Application to insulation requirements and heat exchangers. Prerequisites: Mathematics 2D, Physics 7C, and MAE91, each with a grade of C- or better; and MAE130B. MAE120 and CBEMS125B may not both be taken for credit. (Design units: 0)

MAE130A Introduction to Fluid Mechanics (4) F. Fundamental concepts; fluid statics; fluid dynamics; Bernoulli's equation; control-volume analysis; basic flow equations of conservation of mass, momentum, and energy; differential analysis; potential flow; introduction to viscous incompressible flow. Prerequisites: Physics 7C, Mathematics 2D, Mathematics 2E, MAE30, and MAE80, each with a grade of C- or better. Only one course from MAE130A, MAEH130A, CEE170, CEEH170, and CBEMS125A may be taken for credit. (Design units: 0)

MAEH130A Honors Introduction to Fluid Mechanics (4). Fundamental concepts; fluid statics; fluid dynamics; Bernoulli's equation; control-volume analysis; basic flow equations of conservation of mass, momentum, and energy; differential analysis; potential flow; introduction to viscous incompressible flow. Prerequisites: Physics 7C, Mathematics 2D, Mathematics 2E, MAE30, and MAE80, each with a grade of C- or better. Only one course from MAEH130A, MAE130A, CEE170A, CEEH170A, and CBEMS125A may be taken for credit. (Design units: 0)

MAE130B Introduction to Viscous and Compressible Flows (4) W. Introduction to the analysis of viscous flows including fully developed laminar and turbulent flow in a pipe, viscous flow over immersed bodies, evaluation of boundary layer characteristics, lift and drag, compressible flow in a duct and normal shock waves. Prerequisites: Mathematics 2D, Physics 7C, and MAE91 each with a grade of C- or better; MAE130A and MAE140. (Design units: 1)

MAE135 Compressible Flow (4) S. Compressibility effects in fluid mechanics. One-dimensional flow with area variation, friction, heat transfer, and shocks. Design of gas supply systems. Two-dimensional flow with oblique shocks and isentropic waves. Supersonic airfoil theory and design, wind-tunnel design. Basic diagnostics. Prerequisites: MAE91, MAE130A, MAE130B. (Design units: 1)

MAE136 Aerodynamics (4) F. Analysis of flow over aircraft wings and airfoils, prediction of lift, moment, and drag. Topics: fluid dynamics equations; flow similitude; viscous effects; vorticity, circulation, Kelvins' theorem, potential flow; superposition principle, Kutta-Joukowski theorem; thin airfoil theory; finite wing theory; compressibility. Prerequisites: MAE130A, MAE130B. (Design units: 1)

MAE140 Introduction to Engineering Analysis (4) F. Analytical methods in engineering. Nonhomogeneous linear ordinary differential equations. Variable coefficient linear ordinary differential equations. Eigenfunction expansions. Laplace transforms. Introduction to Fourier transforms. Linear partial differential equations. Prerequisites: Mathematics 2E or equivalent; Mathematics 3D. (Design units: 0)

MAE145 Theory of Machines and Mechanisms (4) S. Presents the basic mathematical theory of machines. Focuses on the principles of cam design, gearing and gear train analysis, and the kinematic and dynamic analysis of linkages, together with an introduction to robotics. Prerequisites: Engineering MAE80; Mathematics 2J. (Design units: 2)

MAE146 Astronautics (4) W. Motion in gravitational force fields, orbit transfers, rocketry, interplanetary trajectories, attitude dynamics and stabilization, navigation, reentry, the space environment. Prerequisite: MAE80. (Design units: 1)

MAE147 Vibrations (4) W. Analysis of structural vibrations of mechanical systems. Modeling for lumped and distributed parameter systems. Topics: single- and multi-degree of freedom systems, free and forced vibrations, Fourier series, convolution integral; mass/stiffness matrices, and normal modes with design project. Prerequisites: MAE80, MAE140, Mathematics 2E. (Design units: 1)

MAE150 Mechanics of Structures (4) F, S, Summer. Stresses and strains. Torsion. Bending. Beam deflection. Shear force and moment distributions in beams. Yielding and buckling of columns. Combined loading. Transformation of stresses and strain. Yielding criteria. Finite elements analysis of frames. Dynamics of a two-bar truss. Prerequisites: Engineering MAE30 or ENGR30; Mathematics 2J. Same as ENGR150. Only one course from MAE150/ENGR150, ENGRH150, CEE150, and CEEH150 may be taken for credit. (Design units: 2)

MAE150L Mechanics of Structures Laboratory (1). Experimental techniques for the measurement of mechanical properties of materials and structures. Methods for load, displacement and strain measurements. Tension, bending, compression tests. Determination of strength, stiffness, toughness for metals, polymers, ceramics and composites. Deformation of structures. Corequisite: MAE150. Prerequisite: MAE30. MAE150L and CEE150L may not both be taken for credit.

MAE151 Mechanical Engineering Design (4) W. A comprehensive group design project experience that involves identifying customer needs, idea generation, reverse engineering, preliminary design, standards, prototype development, testing, analysis, and redesign of a product involving fluid, thermal, and mechanical components. Introduces design for manufacturing and the environment. Prerequisites: MAE120, MAE145, and MAE170; senior standing. (Design units: 3)

MAE152 Introduction to Computer-Aided Engineering (4). Elements and principles of computer-aided engineering with modern hardware and software are presented with a design focus. Case studies are used to assist in finite-element method techniques. Prerequisites: ENGR150, MAE120. (Design units: 2). *Not offered every year.*

MAE155 Composite Materials and Structures (4) S. Motivation for composite materials. Different classifications according to the nature of the matrix (PMC, MMC, CMC) and the reinforcement topology (fibers, whiskers, particulates). Mechanical properties. Failure mechanisms. Designing with composite materials. Advantages and limitations of homogenization techniques for numerical modeling. Prerequisites: ENGR54; MAE150 or CEE150 or ENGR150. Concurrent with MAE255.

MAE156 Mechanical Behavior and Design Principles (4) W. Principles governing structure and mechanical behavior of materials, relationship relating microstructure and mechanical response with application to elasticity, plasticity, yielding, necking, creep, and fracture of materials. Introduction to experimental techniques to characterize the properties of materials. Design parameters. Prerequisites: ENGR54. Same as CBEMS155. (Design units: 2)

MAE157 Lightweight Structures (4) W. Fundamentals of torsion and bending. Analysis and design of thin-walled and composite beams. Stress analysis of aircraft components. Stiffness, strength, and buckling. Introduction to the Finite Element method and its application to plates and shells. Prerequisite: MAE150 or CEE150 or ENGR150. (Design units: 2)

MAE158 Aircraft Performance (4) W. Fundamentals of flight theory applied to subsonic propeller and jet aircraft. Nature of aerodynamic forces, drag and lift of wing and fuselage, high-lift devices, level-flight performance, climb and glide performance, range, endurance, take-off and landing distances, static and dynamic stability and control. Prerequisites: MAE130A. (Design units: 2)

MAE159 Aircraft Design (4) S. Preliminary design of subsonic general aviation and transport aircraft with emphasis on layout, aerodynamic design, propulsion, and performance. Estimation of total weight and weight distribution, design of wings, fuselage, and tail, selection and location of engines, prediction of overall performance. Prerequisites: MAE112, MAE136, MAE158. (Design units: 4)

MAE164 Air Pollution and Control (4). Sources, dispersion, and effects of air pollutants. Topics include emission factors, emission inventory, air pollution, meteorology, air chemistry, air quality modeling, impact assessment, source and ambient monitoring, regional control strategies. Prerequisites: MAE91; MAE130A or CEE170. (Design units: 2)

MAE165 Advanced Manufacturing Choices: From Macro to Nanomachining (4). Selection of manufacturing processes matched to product specifications and design. Principles underlying advanced manufacturing. A decision tree for manufacturing process selection. Examples from a variety of products ranging in size from nanometers to centimeters are considered. Prerequisite: MAE120, MAE156 or MAE157. (Design units: 1)

MAE170 Introduction to Control Systems (4) F. Feedback control systems. Modeling, stability, and systems specifications. Root locus, Nyquist, and Bode methods of analysis and design. Prerequisites: Mathematics 2D, Physics 7C, Engineering MAE80, each with a grade of C- or better; and MAE106. MAE170 and MAEH170 may not both be taken for credit. (Design units: 2)

MAEH170 Honors Introduction to Control Systems (4). Feedback control systems. Modeling, stability, and systems specifications. Root locus, Nyquist, and Bode methods of analysis and design. Contour integration, advanced frequency-domain concepts, and design tools. Prerequisites: Mathematics 2D, Physics 7C, Engineering MAE80, each with a grade of C- or better; and MAE106. MAEH170 and MAE170 may not both be taken for credit. (Design units: 2)

MAE171 Digital Control Systems (4). Methods for analysis and design of discrete-time control systems. Z-transforms, difference equations, discrete Fourier transforms. Sampling theorem and applications. Z-plane stability, frequency response. Digital controller design. Introduction to digital filters. Prerequisite: MAE170. (Design units: 2)

MAE172 Design of Computer-Controlled Robots (4). Students design a small robotic device and program it to exhibit sentient behaviors. The basic aspects of mechatronic design are covered, including motor and sensor selection, control strategies, and microcomputer programming for the implementation of control paradigms. Corequisite: MAE180. Prerequisite: MAE170. (Design units: 3)

MAE175 Dynamics and Control of Aerospace Vehicles (4) S. Equations of motion, linearization, stability derivatives, and longitudinal and lateral modes of motion. Handling qualities, sensors and actuators, and effects of various feedbacks on stability and performance. Stability augmentation. Autopilot design. Prerequisite: MAE106. (Design units: 3).

MAE180 Electric Circuits and Interfaces (4) W. The use of semiconductor devices, digital and linear circuits in the design of interfaces to mechanical engineering systems. The design of interfaces to mechanical engineering system. Emphasis on design and use of microprocessor interfacing for control and data acquisition. Prerequisite: MAE106. (Design units: 3).

MAE183 Computer-Aided Mechanism Design (4) F. Focuses on the design of planar, spherical, and spatial mechanisms using computer algebra and graphics. Topics include both exact and approximate analytical design techniques. Students are required to use the existing software (or develop new algorithms) to design various mechanisms for new applications. Prerequisite: Mathematics 2J. (Design units: 4)

MAE185 Numerical Analysis in Mechanical Engineering (4). Solution of mechanical-engineering equations by means of numerical methods. Errors in numerical analysis. Nonlinear equations and sets of equations. Numerical differentiation and integration. Ordinary differential equations. Boundary-value problems. Partial differential equations. Prerequisites: MAE10, Mathematics 3D; Mathematics 2E or equivalent. MAE185 and Mathematics 105A may not both be taken for credit. (Design units: 2)

MAE188 Engineering Design in Industry (4). Presents the principles of engineering design in the context of an industrial application. Local manufacturing firms define an engineering design project to be completed by students in 10 weeks. Projects include initial brainstorming to final design, with a formal presentation of the result. (Design units: 4)

MAE189 Senior Project—Special Topics (1 to 4) F, W, S. Group or individual senior project of theoretical or applied nature involving design. Prerequisites: senior standing and consent of instructor. May be taken for credit for a total of 12 units. (Design units: 1–4)

MAE195 Seminars in Engineering (1 to 4). Seminars by individual faculty in major fields of interest. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

MAE198 Group Study (1 to 4). Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

MAE199 Individual Study (1 to 4). For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. May be taken for credit for a total of eight units. (Design units: varies)

GRADUATE

MAE200A Engineering Analysis I (4) F. Linear algebra, including vector spaces, matrices, linear system of equations, least squares, and the eignenvalue problem. Ordinary differential equations, including analytical and numerical solution methods, stability, and phrase portraits.

MAE200B Engineering Analysis II (4) W. Review of ordinary differential equations, including Bessel and Legendre functions. Partial differential equations, including the diffusion equation, Laplace's equation, and the wave equation. Fourier series, Fourier and Laplace transforms and their applications.

MAE206 Nonlinear Optimization Methods (4) S. Numerical methods for constrained and unconstrained optimization. Necessary and sufficient conditions for optimimality. Conjugate gradient, variable metric algorithms. Gradient projection, penalty functions, and Lagrange methods. Prerequisite: MAE200A. *Not offered every year.*

MAE207 Methods of Computer Modeling in Engineering and the Sciences (4) S. Unified introduction to finite volume, finite element, field-boundary element, meshless, primal, dual, and mixed methods. Nonlinear problems posed by ordinary as well as partial differential equations. Computer implementations and comparisons of accuracy and convergence.

MAE210 Advanced Fundamentals of Combustion (4) S. Premixed, nonpremixed, and heterogeneous reactions, with emphasis on kinetics, thermal ignition, turbulent flame propagation, detonations, explosions, flammability limits, diffusion flame, quenching, flame stabilization, and particle and spray combustion. Prerequisite: MAE224 or MAE230B. *Not offered every year.*

MAE213 Electric Propulsion (4) S. Space propulsion requirements and maneuvers, stressing those best suited to electric propulsion. An introduction to plasma physics. Electrothermal, electromagnetic and electrostatic accelerators, with emphasis in technologies (ion engines, Hall thrusters and colloidal thrusters) belonging to the latter family. Prerequisite: MAE112. Concurrent with MAE113.

MAE214 Fuel-Cell Fundamentals and Technology (4) S. Fuel-cell systems design, operation, and materials. Electrochemistry and electrocatalysis, cell degradation, nature of fuel-cell electrodes and electrolytes, fuels, and fuel processing. Provides broad insight into fuel-cell science, technology, system design, and operation. Prerequisite: MAE110.

MAE215 Advanced Combustion Technology (4) S. Emphasis on pollutant formation and experimental methods. Formation of gaseous pollutants and soot; transformation and emission of fuel contaminants in gas, liquid, and solid fuel combustion; methods employed to measure velocity, turbulence intensity, temperature, composition, and particle size; methods to visualize reacting flows. Prerequisites: MAE110, MAE200A, and MAE230A or MAE270A; or consent of instructor. *Not offered every year.*

MAE216 Statistical Thermodynamics (4). Statistics of independent particles, development of quantum mechanical description of atoms and molecules, application of quantum mechanics, evaluation of thermodynamic properties for solids, liquids, and gases, statistical mechanics of dependent particles (ensembles). Prerequisite: MAE91 or equivalent. *Not offered every year.*

MAE217 Generalized Thermodynamics (4) S. Generalized thermodynamics develops the laws of continuum thermodynamics from a set of plausible and intuitive postulates. The postulates are motivated qualitatively by a statistical description of matter and are justified by a posterior success for the resulting theory. Prerequisites: MAE91, MAE115 or equivalent. *Not offered every year.*

MAE218 Sustainable Energy Systems (4). Basic principles, design, and operation of sustainable energy systems including wind, solar photo-voltaic and thermal, hydroelectric, geothermal, oceanic, biomass combustion, advanced coal, and next generation nuclear. Includes power generation, storage, and transmission for stationary power generation. Prerequisite: MAE115. Concurrent with MAE118.

MAE220 Conduction Heat Transfer (4). Steady state and transient conduction heat transfer in one- and multi-dimensional geometries. Analytical methods, exact and approximate. Numerical techniques are also included. Prerequisite: MAE120.

MAE221 Convective Heat Transfer (4). Laminar and turbulent heat transfer in external and internal flows. Similarity solutions. Integral methods. Free convection. Prerequisite: MAE230B. *Not offered every year.*

MAE223A Numerical Methods in Heat, Mass, and Momentum Transport (Laminar Flows) I (4) F. Introduction to the discretization of various types of partial differential equations (parabolic, elliptic, hyperbolic). Finite-volume discretization for one- and two-dimensional flows. Use of a two-dimensional elliptic procedure to predict sample laminar flows. Corequisite or prerequisite: MAE230A. *Not offered every year.*

MAE223B Numerical Methods in Heat, Mass, and Momentum Transport (Turbulent Flows) II (4) W. Introduction to turbulence. Reynolds-averaging of Navier-Stokes equations. Second-order closure of the average equations. Use of two-dimensional elliptic procedure to predict confined turbulent flows. Prerequisite: MAE223A. *Not offered every year.*

MAE224 Convective Mass Transfer (4). Concentrations, velocities, and mass fluxes. Mechanisms of mass transport and transport properties in multicomponent media. Mass transfer problems described by ordinary differential equations. Partial differential transport equations and some solutions of technical importance. Interphase mass transfer formulations and solutions. Prerequisite: MAE120. *Not offered every year.*

MAE226 Special Topics in Fluid and Thermal Sciences (1 to 4). Special topics of current interest in fluid mechanics, heat and mass transfer, multiphase flows, or combustion. Emphasis could be placed on theory, computational methods, or experimental techniques. Prerequisite: consent of instructor.

MAE230A Inviscid Incompressible Fluid Mechanics I (4) F. Equations of motion. Vector notation. Flow kinematics. Potential flow and complex potential. Vorticity and circulation. Bernoulli's theorem. Crocco's theorem. Conformal, Joukowski, and Schwarz-Christoffel transformations. Prerequisite: MAE130A.

MAE230B Viscous Incompressible Fluid Dynamics II (4) W. Review of mass, momentum, energy equations. Stress tensor, constitutive relations. Exact solutions to laminar flows. Stokes and Oseen flows. Concept of self-similarity. Boundary layer theory: thin-layer approximation, Falkner-Skan, Blasius solutions, integral methods. Jet, wake, cavity flows. Introduction to turbulence: instability, Reynolds averaging, mixing length. Prerequisite: MAE230A.

MAE230C Compressible Fluid Dynamics (4) S. One-dimensional unsteady flow: Riemann invariants, acoustics, shock tube. Two-dimensional flow: shock polars, linear theory, similarity rules, method of characteristics. Three-dimensional flow: slender-body theory. Effects of viscosity and conductivity: laminar boundary layer, Crocco-Busemann relations. Prerequisite: MAE230A or MAE230B.

MAE230D Theoretical Foundations of Fluid Mechanics (4). Well-posed problems and boundary, initial, and interface conditions; strong and weak solutions. Similarity, perturbation theory and limit behavior, bifurcations. Wave propagation: dispersive and nondispersive waves, nonlinear acoustics, ship waves, internal gravity waves, water waves. Vortices: mutual interactions and stability. Jets, wakes, cavities. Prerequisites: MAE230A, MAE230B. Not offered every year.

MAE231 Fundamentals of Turbulence (4). Phenomenon of turbulence. Reynolds equations. Dynamics of turbulence. Free turbulent shear flows. Wall-bounded turbulent shear flows. Turbulent transport of scalar quantities. Spectral dynamics. Mathematical models of turbulence. Prerequisite: MAE230A, MAE230B.

MAE233 Turbulent Free Shear Flows (4). Practical and theoretical aspects of turbulent free shear flows. Instability, global scaling laws, mixing, and noise generation in incompressible and compressible shear layers, jets, and wakes. Kelvin-Helmoltz instability, near- and far-field growth rates, effect of compressibility, aeroacoustics of jets. Prerequisites: MAE200B, MAE230A, MAE230B.

MAE236 Nonequilibrium Gas Dynamics (4). Molecular description of fluid flow. Boltzmann equation. Chapman-Enskog expansion for flows with translational nonequilibrium. Shock structure. Inviscid flows with chemical and vibrational nonequilibrium. Prerequisite: MAE230C. *Not offered every year.*

MAE237 Computational Fluid Dynamics (4). Mathematical, physical, and computational fundamentals of computational fluid dynamics, numerical methods for solving the Euler and Navier-Stokes equations. Topics include: finite-difference and finite-volume discretization, time marching methods, von Neumann analysis, upwinding, flux splitting, TVD, and other high-resolution shock-capturing schemes. Prerequisite: MAE230C or consent of instructor.

MAE238 Experimental Fluid Dynamics (4) S. Concepts and techniques for measurement of fluid motion. Quantitative and qualitative flow visualization. Flow facilities, shadowgraph, schlieren, interferometer, thermal anemometer. Laser diagnostics, fluorescence, Rayleigh, Raman, Mie scattering. Laser-Doppler, particle-image, and image-correlation velocimetry. Three- and four-dimensional digital imaging. Prerequisites: MAE230A, MAE230B. *Not offered every year.*

MAE241 Dynamics (4) W. Kinematics and dynamics of three-dimensional motions. Lagrange's equations, Newton-Euler equations. Applications include robot systems and spinning satellites. Prerequisite: MAE147 or equivalent.

MAE242 Robotics (4). Spatial rigid-body transformations. Forward and inverse kinematics. Jacobian of serial and parallel chains. Screw coordinates and transformations. Rate and static analyses using screw theory. Singularity analysis. Trajectory generation. *Not offered every year.*

MAE243 Spaceflight Mechanics (4). Accurate force modeling; spacecraft trajectory design problem; two-body dynamics; Lambert problem; orbit perturbations and maintenance; applications to Earth and Moon missions; gravity assists and three-body dynamics; applications to Moon, Mars, and interplanetary missions; libration point missions and dynamical system theory methods.

MAE244 Theoretical Kinematics (4). Spatial rigid body kinematics is presented with applications to robotics. Orthogonal matrices, Rodrigues' formula, Quaternions, Plücker coordinates, screw theory, and dual numbers are studied using modern projective geometry and multi-linear algebra. Applications include trajectory planning, inverse kinematics, and workspace analysis. *Not offered every year.*

MAE245 Spatial Mechanism Design (4) W. Fundamental kinematic theory required for planar, spherical, and spatial mechanism design. The focus is on algebraic methods for the exact solution of constraint equations. *Not offered every year.*

MAE247 Micro-System Design (4) F. Covers the fundamentals of the many disciplines needed for design of Micro-Electro-Mechanical Systems (MEMS): microfabrication technology, structural mechanics on micro-scale, electrostatics, circuit interface, control, computer-aided design, and system integration. Same as EECS278.

MAE249 Micro-Sensors and Actuators (4) S. Introduction to the technology of Micro-Electro-Mechanical Systems (MEMS). Fundamental principles and applications of important microsensors and actuation principles on microscale. Introduction to the elements of signal processing; processing of materials for micro sensor/actuator fabrication; smart sensors and microsensor/ microactuator array devices. Same as EECS279.

MAE250 Biorobotics (4) W. Sensors, actuators, and neural circuits for biological movement control from an engineering perspective. Current approaches to robotic and mechatronic devices that support and enhance human movement in health and following neurologic injuries like stroke and spinal cord injury.

MAE252 Fundamentals of Microfabrication (4) F. Introduces Engineering and Science students to the science of miniaturization. Different options to make very small machines (micro and nano size) are reviewed, materials choices are discussed, scaling laws are analyzed, and many practical applications are listed.

MAE253 BIOMEMS (4) W. Introduction of BIOMEMS to engineering and science students. After study of various sensing technique fundamentals, various biosensors are introduced. The biological principles involved are introduced via examples. Nanomachining and biomimetics are also discussed.

MAE254 Mechanics of Solids and Structures (4) W. Finite deformation kinematics; stress and strain measures; invariance in solid mechanics; objective rates; constitutive theory of elastic and inelastic solids; rate formulations; computational approaches; theories of plates and shells; applications to aerospace vehicles.

MAE255 Composite Materials and Structures (3). Motivation for composite materials. Different classifications according to the nature of the matrix (PMC, MMC, CMC) and the reinforcement topology (fibers, whiskers, particulates). Mechanical properties. Failure mechanisms. Designing with composite materials. Advantages and limitations of homogenization techniques for numerical modeling. Prerequisites: ENGR54; MAE150 or CEE150 or ENGR150. Concurrent with MAE155.

MAE260 Current Issues Related to Tropospheric and Stratospheric Processes (4). Examination of current issues related to the atmosphere, including energy usage; toxicology; effects on humans, forest, plants, and ecosystems; particulate matter (PM10); combustion; modeling, and meteorology; airborne toxic chemicals and risk assessment; application of science to development of public policies. Prerequisite: One course selected from Chemistry 245, Earth System Science 202, Engineering MAE164, Engineering MAE261, or consent of instructor. Same as Chemistry 241. *Not offered every year.*

MAE261 Air Quality Modeling (4). Fundamental principles necessary to understand the dynamics of air pollutants. Derivation and description of mathematical techniques for the numerical solution of the atmospheric equation. Formulation and development of air quality models. Prerequisites: MAE230A and MAE230B or consent of instructor; MAE10 or equivalent FORTRAN knowledge. *Not offered every year.*

MAE270A Linear Systems I (4) F. Input-output and state-space representations of continuous-time linear systems. State transition matrices. Controllability and observability. Irreducible realizations. State feedback and observer design. Prerequisite: MAE170 or EECS160A.

MAE270B Linear Systems II (4). Advanced topics in linear systems: bases, linear operator representations, and Jordan forms. Review of dynamical systems, and stability. Time-varying systems, discrete-time representations, and multi-input/multi-output systems. Introduction to continuous and discrete time linear regulator (LQR) problems. Prerequisite: MAE270A. *Not offered every year.*

MAE271 System Identification (4) F. Covers the latest techniques in system identification. Materials covered encompass techniques in both frequency and time domain. Linear and nonlinear dynamic processes, correlation, regression, stochastic approximation, etc., are among the topics covered. Prerequisite: MAE270A. *Not offered every year.*

MAE272 Robust Control Theory (4). Methods for control design of systems with uncertainty. Feedback stability and small gain theorem. Multivariable stability margins and multiplier theory. H-infinity-optimal control, linear matrix inequalities. Prerequisite: MAE270A. *Not offered every year.*

MAE273 Control of Robot Systems (4). Dynamic analysis and control system design of open- and closed-chained mechanisms. Methods for real time control of nonlinear systems. Lyapunov Stability. Advanced motion planning algorithms. Prerequisites: MAE241, MAE270A. *Not offered every year.*

MAE274 Optimal Control (4). Introduction to the principles and methods of optimal control. Topics include: objectives and issues in controlling nonlinear systems; linear variational and adjoint equations; optimality conditions via variational calculus, maximum principle, and dynamic programming; solution methods; applications to control of robots and aerospace vehicles. *Not offered every year.*

MAE275 Nonlinear Feedback Systems (4). Advanced tools for feedback control system analysis and synthesis. Norms, operators, Lp spaces, contraction mapping theorem, Lyapunov techniques along with their extensions. Circle criterion, positivity and passivity. Applications to nonlinear control methods, such as sliding mode or adaptive techniques. Prerequisite: MAE270B. *Not offered every year.*

MAE276 Geometric Nonlinear Control (4). Using the mathematics of differential geometry, a number of the concepts and results of linear systems theory have been extended to nonlinear systems. Describes these extensions and illustrates their use in nonlinear system analysis and design. Prerequisites: MAE200A, MAE270A. *Not offered every year.*

MAE277 Introduction to Neural Control Systems (4). Basic models and learning rules of artificial neural networks: perceptrons, multilayer neural networks and backpropagation, support vector machines, radial basis functions networks, CMAC networks. Introduction to regularization and statistical learning theory. Neural networks in system identification and control.

MAE278 Estimation Techniques for Tracking and Navigation (4). Fixed bearing navigation, least squares, uncertainty modeling, minimum variance and maximum likelihood, covariance analysis and filter efficiency, GPS, orbit determination, Gauss-Markov models, inertial navigation, Kalman filters, Fokker-Planck and Kushner equations, nonlinear-filters. Prerequisites: MAE200A, MAE270A.

MAE279 Special Topics in Mechanical Systems (4). Selected topics of current interest in mechanical systems. Topics include robotics, kinematics, control, dynamics, and geometric modeling. Prerequisites: MAE241, MAE270A. May be repeated for credit as topics vary. *Not offered every year.*

MAE294 M.S. Project (4) F, W, S. Tutorial in which master's-level students taking the comprehensive examination option undertake a master's-level research project. May be repeated for credit.

MAE295 Special Topics in Mechanical and Aerospace Engineering (1 to 4) F, W, S. Special topics by individual faculty in major fields of interest. May be repeated for credit as topics vary.

MAE296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the thesis required for the M.S. in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

MAE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the dissertation required for the Ph.D. in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

MAE298 Seminars in Mechanical and Aerospace Engineering (1) F, W, S. Presentation of advanced topics and reports of current research efforts in mechanical engineering. Required of all graduate students in mechanical engineering. Satisfactory/Unsatisfactory grading only. May be repeated for credit as topics vary.

MAE299 Individual Research (1 to 12) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

SCHOOL OF HUMANITIES

Vicki L. Ruiz, **Dean**

143 Humanities Instructional Building
Undergraduate Counseling: (949) 824-5132
Graduate Counseling: (949) 824-4303
http://www.humanities.uci.edu/

The School of Humanities is internationally recognized for its outstanding programs in the main areas of humanities inquiry: literature, history, film, languages, the arts, and philosophy. With a faculty whose distinctions include two Pulitzer Prizes and numerous other awards, the School offers 24 majors and 30 minors that include those in traditional disciplines, languages other than English and interdisciplinary areas of study.

The core of the educational mission of the humanities is imparting to students tools of analysis that will allow them to understand, describe, and explain the world around them. A liberal arts education in the humanities prepares students to analyze various written and visual forms and to communicate effectively. Courses in Humanities majors usually require substantial amounts of writing, and students are expected to communicate their ideas in written and sometimes oral forms. All Humanities students are introduced to philosophy, history, visual culture, literature, and a language other than English. In specific majors, students focus on a more specialized field of inquiry. In many courses a topic of study, such as English literature or the history of slavery, provides an opportunity for students to consider the challenges of a world that changes rapidly. In the words of a "Manifesto for the Humanities," prepared for the President of the University of California, it is humanities that provide "the ability to express oneself clearly and accurately; the skill of critical evaluation, both of ideas and actions; the courage to make choices based on shared values and priorities; the opportunity to conduct an intensive conversation with the traditions, present and past, that help make us who we are, and above all, who we will be; and as a result, the ability to understand and make sense of other people and their cultures." Humanistic inquiry is in no way isolated from the "real world," but rather its central goal is to equip students to enter into that real world as critically thinking citizens.

Because language is the humanist's essential tool and the traditional medium of historical record, philosophical speculation, and literary creation and criticism, the School of Humanities places special emphasis on language and training in composition. The campuswide Writing Program is housed in the School of Humanities, as are our distinguished programs in creative writing, literary journalism, and the Program in Academic English/English as a Second Language.

The School of Humanities also offers programs in more than a dozen languages other than English and requires its majors to take two years or the equivalent of a classical or modern language. The serious study of language other than English is crucial to a university education that aims to foster critical thinking, objective self-reflection, and international awareness. In today's world, the ability to understand more than one language can help Humanities graduates empathize with different cultures and consider societies outside of the United States. In addition, exposure to more than one linguistic system can lead to a more critical understanding of a native language. In 2001, the School established the International Center for Writing and Translation, which sponsors research programs that address the importance of conversations across languages and cultures. And in 2008, the School created the Humanities Language Learning Program as a central clearinghouse for language pedagogy and for instruction of less commonly taught languages.

A crucial part of the School's curriculum is the Humanities Core Course, which integrates the study of philosophy, literature, film and the arts, and history along with lower-division writing. Interdisciplinary studies are also an essential feature of the Humanities Honors Program and programs in Film and Media Studies, Comparative Literature, Global Cultures, Religious Studies, and Humanities and Arts. The Department of Asian American Studies, the Department of Women's Studies, and the Interdisciplinary Programs in African American Studies and Latin American and Caribbean Studies are also located in the School. With courses in the Social Sciences as well, these programs are excellent examples of how the Humanities reaches across boundaries of disciplinary knowledge.

Students majoring in the humanities are particularly well-prepared for careers in all fields in which analysis, judgment, and argument are important. Humanities students have moved into business, the law, education, politics, public policy, academia, and journalism. Employers in all sectors are placing increasing emphasis on the recruitment of college graduates who can write and think critically. These skills are ultimately more important to many employers than a specific form of technical training, and it is these skills that are imparted most effectively in the School of Humanities.

DEGREES

African American Studies	B.A.
Art History	B.A.
Asian American Studies	B.A.
Chinese Studies	B.A.
Classical Civilization	B.A.
Classics	B.A., M.A., Ph.D.
Comparative Literature	B.A., M.A., Ph.D.
Culture and Theory	M.A., Ph.D.
East Asian Cultures	B.A.
East Asian Languages and Literatures	M.A., Ph.D.
English	B.A., M.A., M.F.A., Ph.D.
European Studies	B.A.
Film and Media Studies	B.A.
French	B.A., M.A., Ph.D.
German	M.A., Ph.D.
German Studies	B.A.
Global Cultures	B.A.
History	B.A., M.A., Ph.D.
Humanities and Arts	B.A.
Japanese Language and Literature	B.A.
Korean Literature and Culture	B.A.
Latin	B.A.
Literary Journalism	B.A.
Philosophy	B.A., M.A., Ph.D.
Religious Studies	B.A.
Spanish	B.A., M.A., Ph.D.
Visual Studies	M.A., Ph.D.
Women's Studies	B.A.

Honors at Graduation

Campus criteria for honors at graduation are described in the Division of Undergraduate Education section under Honors Recognition, on page 52. In addition to campus criteria, the School of Humanities uses cumulative GPA as the criterion for the awarding of Honors at Graduation. The official designation of Honors on the diploma and transcript will be based upon the candidate's cumulative GPA and total units completed at the end of the final quarter.

HUMANITIES CENTER

1309 Humanities Gateway; (949) 824-3638
http://www.humanities.uci.edu/collective/
Catherine Liu, **Director**

The UCI Humanities Center supports research and debate on a wide range of issues that draw vital connections between culture, history, literature, technology, media, and the arts. The Humanities Center works to strengthen and enhance the public and academic reputation of UCI by promoting creative, pragmatic, and theoretical engagements with global and local questions of culture and community, progress and tradition.

Through the events it sponsors and the projects it funds, the UCI Humanities Center showcases original Humanities scholarship in action, allowing faculty, students, and the public to pursue conversations that they simply cannot find elsewhere. In addition to its programming, the UCI Humanities Center works to support faculty and graduate student research through two annual grant cycles. Humanities teaching and research anchor the intellectual life and service mission of an outstanding public University. It does so by nurturing dialogue and communication in the academic community, the public sphere, and the democratic process.

The UCI Humanities Center is now part of the UCI Humanities Collective, an umbrella organization that comprises HumaniTech®, whose aim is to build connections across disciplines through a critical exploration of the interplay between Humanities research and technology, and Big Ideas, an interactive platform featuring recent books by Humanities faculty and lecturers.

HUMANITIES INSTRUCTIONAL RESOURCE CENTER AND COMPUTING FACILITY

The Humanities Instructional Resource Center (HIRC) and the Humanities Computing Facility (HCF) share space in Humanities Hall and provide comprehensive technology support for instruction, research, and faculty and staff development.

HIRC services and facilities include video and audio libraries and audiovisual equipment. HCF includes the computer labs, fee-based laser printing, support for wireless networking in the Humanities quad, and computing consultation. Both facilities provide technology-related research and development assistance for faculty, graduate, and undergraduate students. HCF houses two PC labs, one Macintosh lab, and one drop-in lab (with both Macs and PCs). The facility has more than 100 stations. HCF also provides a wide range of computer services (scanning, document conversion, workshops, and more).

Both HCF and HIRC labs provide a wide variety of instructional resources including, among others, multimedia applications and development stations, foreign language word processing, Web browsing (including support for non-Roman alphabets), and language learning materials. The labs are available to Humanities students, instructors, and staff for class instruction and drop-in purposes.

Additional information may be obtained from the HIRC Web site at http://www.humanities.uci.edu/hirc; or the HCF Computer Consulting Office, 4000 Humanities Gateway, (949) 824-7609; or the HIRC main offices, 269 Humanities Hall, (949) 824-6344.

HUMANITIES OUT THERE (H.O.T.) PROGRAM

172 Humanities Instructional Building; (949) 824-9735
Lynn Mally, **Director**

H.O.T. is an outreach program between UCI's School of Humanities and local schools. The program consists of a series of five-week workshops on selected topics in the humanities. Each workshop sends out a team of five or more undergraduates to a high school classroom, supervised by faculty and advanced graduate students in the humanities.

Requirements for undergraduates include attending at least five training sessions at UCI; attending at least five tutoring sessions at a local school; a number of electronic journal entries; and a three- to five-page paper with an academic focus. Undergraduates can earn two or four units of H.O.T. credit each quarter through Humanities 195.

INTERNATIONAL CENTER FOR WRITING AND TRANSLATION

1349 Humanities Gateway; (949) 824-1948
http://www.hnet.uci.edu/icwt

Established in 2001, the International Center for Writing and Translation (ICWT) in the UCI School of Humanities fosters writing, translation, and criticism in multilingual and international contexts. It links existing faculty research interests in cultural literacy to general discussions about linguistic and cultural issues relevant to the diverse, multiethnic, and multilingual student population at UCI and the population of California more generally. The Center's programs are premised on the principle that knowledge is a result of reciprocal contact and linkages based on equality and respect. In this model, the Center is dedicated to highlighting and supporting literary works, languages, performance, and oral traditions of cultures that span the globe.

The following goals are integral to the general mission of the Center: (1) supporting writers working in various languages and diverse genres, including creative nonfiction, through grants and fellowships; (2) fostering research and discussion of the theory, practice, aesthetics, and politics of translation, broadly conceived; (3) supporting translations of work of literary merit; (4) sponsoring conferences, workshops, and public fora on writing and translation, as well as reading and performances; and (5) supporting activities of UCI faculty, students, and the surrounding community involving the far-reaching themes of cultural and media literacy and cross cultural transposition.

DR. SAMUEL M. JORDAN CENTER FOR PERSIAN STUDIES AND CULTURE

1110 Humanities Gateway; (949) 824-1662
http://www.humanities.uci.edu/persianstudies/
Nasrin Rahimieh, **Director**

The Dr. Samuel M. Jordan Center for Persian Studies and Culture serves as an umbrella organization for various activities related to the study of Iran and the Persianate world conducted at the University of California, Irvine.

Courses, offered by the affiliated faculty, are the backbone of the Center's academic and pedagogical mission. These include courses on language, literature, history, music, and culture at undergraduate and graduate levels.

The academic courses are administered through different departments. The Department of Classics offers courses on Persian language. Courses in ancient, medieval, and modern Persian history are administered by the Department of History. Courses on modern Persian literature and the literature of Iranian diaspora are offered through the Department of Comparative Literature, and courses on Persian music are housed within the Department of Music.

Undergraduate Programs

HUMANITIES UNDERGRADUATE STUDY

143 Humanities Instructional Building; (949) 824-5132
http://www.humanities.uci.edu/undergrad/
Rodrigo Lazo, **Associate Dean**

In addition to 24 majors and 30 minors, the School also offers a formal concentration in Medieval Studies and courses in Arabic, Hebrew, Italian, Persian, and Russian.

The academic counselors in the Humanities Undergraduate Counseling Office, located in 143 Humanities Instructional Building, help all students in planning a program of study. Transfer students in particular need to consult an academic counselor to determine major requirements. Students who expect to pursue graduate study also should consult with appropriate faculty members to ensure proper preparation.

The academic counselors assist freshmen and sophomores who are interested in the humanities but who have not chosen a major in the School. They are especially knowledgeable about University regulations, requirements in and outside the School, course content, options to major, and other matters that may present difficulties. For the first two years, students in Humanities are encouraged to explore the various disciplines represented in the School. During that time the academic counselors are prepared to help the undeclared student keep options to a major open, plan a coherent program of humanistic study, and reach an eventual decision about the major.

Generally each major stipulates a one-year course that is both an introduction to the discipline and a prerequisite to the major itself. Students who plan wisely will construct programs that include a good number of such courses.

NOTE: In many undergraduate courses in the School of Humanities, additional meetings between individual students and the instructor may be required. Many courses are composed of both lectures and *required* discussion sessions.

Undergraduate students in the School of Humanities participate in the affairs of the School in a number of ways: by serving on committees in various departments, by sitting with the faculty in its meetings, by participating as mentors for new Humanities majors, and by working as peer academic advisors in the Undergraduate Counseling Office.

Humanities Peer Mentor Program

The Humanities Peer Mentor Program is designed to address some of the academic, cultural, and social needs of freshmen in the School of Humanities. The program features two-tiered mentoring, with successful upper-division students mentoring small groups of new students, and the student mentors in turn working with faculty and staff. Another focus of the program is to encourage and assist student mentors to go on to graduate school.

Participants attend workshops on topics such as study skills, library research, time management, and careers, as well as take part in a variety of social events, and keep journals in which they express their ideas and raise issues for their mentors. Call (949) 824-5132 for additional information.

HUMANITIES HONORS PROGRAM

143 Humanities Instructional Building; (949) 824-5132
Alice Fahs, **Director**

The Honors Program of the School of Humanities is a two-year, upper-division program designed to challenge superior students from all fields by providing special opportunities for interdisciplinary work within an intellectually charged framework. Small seminars and the opportunity for independent research are some of the advantages offered by the program, which is open by invitation to all UCI students regardless of their majors.

Students in the program benefit from their involvement in the campus community of Humanities scholars. They enjoy a close relationship with the faculty and profit from intense interaction with their intellectual peers. A comprehensive advising program involving Honors faculty advisors as well as specially trained Honors peer advisors ensures that Humanities Honors students continually receive timely, individualized advice about their academic careers. Formal as well as informal gatherings, including student-organized social activities ranging from coffee hours to theater parties, augment a wide range of campus activities. Humanities Honors students have the opportunity to become some of the campus's best informed scholars on a broad range of topics, from artificial intelligence to medical ethics, from Shakespeare to Gilbert and Sullivan, from problems of the ancient Near East to the dilemmas of modernity.

Humanities Honors students complete a two-part course of study. In their junior year, students take three quarters of an interdisciplinary Proseminar (Humanities H120) organized about a single topic or problem, such as crime and punishment, the other, the development of religion in the West, the self, nature, or the American dream. The sequence is designed to compare and contrast modes of analysis and critical thinking in history, literary studies, and philosophy. In a small seminar setting, students are encouraged to become reflective about their own chosen disciplines.

In their senior year, students take a sequence beginning in the fall with a Senior Honors Seminar (Humanities H140), and continuing in the winter and spring with the Senior Honors Thesis (Humanities H141) and the Senior Honors Colloquium (H142), prepared as an independent research project under the direction of a faculty member on a topic chosen by the student. Students present their theses in an informal gathering with their faculty advisors in the spring, and a prize is awarded for the year's outstanding thesis.

In both sequences the Honors students benefit from their close association with exceptional scholars and the challenge and support of their intellectual peers.

Students interested in learning how the Humanities Honors Program will fit into their regular courses of study are encouraged to contact the Senior Academic Counselor in Humanities; telephone (949) 824-5132.

CAMPUSWIDE HONORS PROGRAM

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

HUMANITIES INTERNSHIP PROGRAM

166 Humanities Instructional Building; (949) 824-1392
http://www.humanities.uci.edu/intern/
Rodrigo Lazo, **Director**

The Humanities Internship Program is designed to bring highly qualified Humanities majors together with public sector employers and nonprofit companies in the Orange County area who are looking for employees with excellent skills in writing and communication. Local employers who participate in the program believe that Humanities students' education in critical thinking, writing, communication, and analysis equip them to be successful employees in their firms.

Interns are placed for the academic year and preceding summer, working 10–15 hours a week for hourly salaries of $12. (No course credit is earned.) Employers offer committed supervisors to student interns, and interns are involved in a meaningful aspect of the

firm's ongoing business. The internship relationship can become the basis for long-term employment with the firm.

Interns participate in quarterly meetings with a program coordinator at UCI to discuss their work experiences and benefit from one another's insights. At the end of each quarter of the internship, the student provides an assessment of the experience. The program coordinator also conducts on-site visits with the interns and their supervisors.

The Internship Program is open to all Humanities majors who are in good academic standing and will have completed at least two quarters of academic work at UCI as a Humanities major by the end of the quarter in which they are selected for the program. Only students who will have completed the Humanities Core Course (or the Core Course substitution) by the end of that quarter will be eligible.

Applications are available online and in the Humanities Undergraduate Study Office, 143 Humanities Instructional Building, in mid- to late-winter quarter. The deadline for submission of all application materials is early April.

CENTER FOR INTERNATIONAL EDUCATION

The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of the many worldwide opportunities that exist for study, work, internship, volunteering, and research. School of Humanities majors and minors can benefit from a broader perspective of their fields by studying for one year at a university in such countries as China, France, Germany, Italy, Japan, Russia, Spain, or the United Kingdom through EAP. Students can also augment their exposure to other cultures with programs sponsored through IOP. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

LANGUAGE OTHER THAN ENGLISH PLACEMENT AND PROGRESSION

The following policies apply to all UCI students taking language other than English courses.

Language Other Than English Progression. Within the beginning and intermediate language instructional sequences (1A-B-C and 2A-B-C, and for Latin and Greek, 1A-B-C and 100A or 100B), students must earn a grade of at least C (or Pass) in order to advance to the next level of instruction, unless an exception is permitted by the appropriate course director and the Associate Dean of Humanities for Undergraduate Study.

Language Other Than English Placement. Placement tests are required for the following languages: Chinese, Japanese, Korean, Spanish (for students with no previous college course work), and Vietnamese. Contact the UCI Academic Testing Center for information; telephone (949) 824-6207; e-mail: testoff@uci.edu; http://www.testingoffice.uci.edu/. Placement tests are recommended but not required for French and German language courses. The purpose of placement testing is to ensure success in UCI language courses.

For languages other than English which are not listed above, students entering UCI with previous high school language training are placed as follows: in general, one year of high school work is equated with one quarter of UCI work. Thus, students with one, two, three, or four years of high school language other than English will normally enroll in 1B-, 1C-, 2A-, or 2B-level language courses, respectively. Students who opt to "go back" one quarter will earn credit (i.e., a student with three years of high school language other than English may opt to take 1C instead of 2A). If it has been five or more years since the last high school course, the student may begin at 1A for credit. Exceptions must have the approval of the appropriate course director and the Associate Dean of Humanities for Undergraduate Study. Transfer students will not receive credit for repeating at UCI language other than English courses for which they received credit upon matriculation to UCI even if they are placed by testing into the equivalent of a previously taken course.

Language Other Than English Advanced Placement Credit. Students cannot earn units or grade points at UCI in courses from which they have been exempted on the basis of Advanced Placement credit. However, since Advanced Placement awards a maximum of 8 units for scores of 4 and 5, students may elect to take 2C or the equivalent for credit.

Native Speakers of Languages Other Than English. A native speaker of a language other than English, is defined by the University as someone who attended the equivalent of secondary school in another country where the language of instruction was other than English. Students with prior background in a language other than English should consult the UCI Academic Testing Center to see if a placement test is available to demonstrate competence in that language. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, or equivalent, of one year of formal schooling at the 10th-grade level or higher in an institution where the language of instruction is not English will meet the School of Humanities Language Other Than English requirement equal to second-year language. Appropriate documentation and translation, when necessary, must be presented to substantiate that the course work was completed. For some majors offered by the School of Humanities, students may be exempted from taking third-year language study in that language. In this case, the student must *substitute* appropriate upper-division courses in the major to replace the number of exempted courses. For example, if a native speaker of French is exempted from French 100A and 100B, that student must replace those two courses with two other upper-division French courses offered by the Department of French and Italian.

Repeating Deficient Foreign Language Other Than English Grades. First- and second-year language other than English courses and third-year language other than English composition courses are sequential and each is prerequisite to the next. This is generally true also of fourth-year Chinese, Japanese, and Korean. Students wishing to repeat a deficient grade in one of these courses must repeat it *prior* to continuing on to the next level of the language. A student may not take a lower-level course for credit once a more advanced level has been completed with a passing grade.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 55–62.

School Requirements

A. Satisfactory completion of Humanities 1A-1B-1C taken for letter grades in the freshman year.

Transfer students in all majors in the School of Humanities may substitute for the Humanities Core Course appropriate course work in English composition, literature, history, and philosophy, as described on the School of Humanities Web site at http://www.humanities.uci.edu/undergrad/requirements/core_alt.html. **No overlap** is permitted between the Humanities Core Course substitution and a student's departmental/major requirements.

B. College-level course work equivalent to UCI's sixth quarter of study (2C level, *or* for Latin or Greek, two 103s or 104s) in a language other than English, taken for a letter grade and passed with a grade of C or better, or equivalent competence.

Quarterly consultation with a faculty advisor is recommended.

Maximum Overlap Between Major Requirements: In fulfilling degree requirements for multiple majors, a maximum of two courses may overlap between any two majors.

Maximum Overlap Between Major and Minor Requirements: In fulfilling minor requirements, a maximum of two courses may overlap between a major and a minor. No course overlap is permitted between minors.

Normal Progress in the Major: School of Humanities majors are expected to take at least one course required for their major program each quarter as well as make progress toward the completion of the School's language other than English requirement.

School Residence Requirement: At least five upper-division courses required for each major must be completed successfully at UCI. Completion of a minor program is optional; however, for certification in a minor, at least four upper-division courses required for the minor must be completed successfully at UCI. See individual major and minor requirements for specific courses and how participation in the Education Abroad Program (EAP) can affect the residence requirement. Exceptions are considered on a case-by-case basis and decided in consultation between the appropriate department or faculty member and the Associate Dean of Humanities for Undergraduate Study.

Off-campus Internship Policy. In most cases, Humanities students are not allowed to earn credit for off-campus internships. However, if a department or program determines that the internship is academically appropriate and promotes the student's academic goals, the student may take the internship as Independent Study and credit will be given.

A maximum of four units total may be earned for internships; however, the units may not be counted toward the student's major requirements. (No credit is given for *paid* internships, such as those offered through the Humanities Internship Program.) The sponsoring department or program and the instructor will in all cases require a substantial academic product, such as a paper, growing out of the internship.

A student who wishes to seek approval for an unpaid off-campus internship and earn course credit must file an Independent Study form with the Humanities Undergraduate Study Office prior to beginning the internship.

Change of Major. Students who wish to change their major to one offered by the School of Humanities should contact the Humanities Undergraduate Counseling Office for information about change-of-major requirements, procedures, and policies. Information is also available at http://www.changeofmajor.uci.edu.

Graduate Programs

HUMANITIES GRADUATE STUDY AND RESEARCH

179 Humanities Instructional Building; (949) 824-4303
Glen Mimura, **Interim Associate Dean**

The School of Humanities offers graduate degrees in a wide range of disciplines. Individual departments administer most of these, although there are two inter-departmental programs: Culture and Theory and Visual Studies (a joint program between the Departments of Art History and Film and Media Studies). The School's graduate programs are generally aimed at those pursuing a Ph.D. degree, with the Master's degree awarded en route. Exceptions include the Summer M.A. Program in the Department of English, a terminal M.A. option in the Department of German, and the M.A. program in the Department of History. In addition, the Department of English administers the M.F.A. degree in English (Fiction/Poetry).

The School of Humanities houses four graduate emphases that may be pursued in conjunction with study toward a degree: Asian American Studies, Critical Theory, Feminist Studies, and Visual Studies. Several departments may also permit students to do part of their work for the Ph.D. in a related discipline.

A limited number of students are accepted annually to study for teaching credentials. This program is a cooperative effort between the School and the UCI Department of Education.

Graduate students participate in the affairs of the School of Humanities by serving as representatives on various departmental, schoolwide, and campuswide committees.

INTERDISCIPLINARY PROGRAM IN AFRICAN AMERICAN STUDIES

3000 Humanities Gateway; (949) 824-2376
Ulysses Jenkins, Jr., **Director**

Participating Faculty

Bridget R. Cooks, Ph.D. University of Rochester, *Assistant Professor of African American Studies and Art History* (African American art and culture, Black visual culture, museum criticism, film, feminist theory and postcolonial theory)

Sohail Daulatzai, Ph.D. University of Southern California, *Assistant Professor of Film and Media Studies* (cultural studies, postcolonial theory, race, Islam, cultural politics of popular culture: cinema, hip-hop, and sports)

Douglas M. Haynes, Ph.D. University of California, Berkeley, *Director of the ADVANCE Program for Faculty Equity and Diversity and Associate Professor of History* (social and cultural history of modern Britain, social history of modern medicine)

Ulysses Jenkins, Jr., M.F.A. Otis Parsons Art Institute, *Director of the Interdisciplinary Program in African American Studies and Associate Professor of Studio Art* (film as a primary medium)

Victoria E. Johnson, Ph.D. University of Southern California, *Department Chair and Associate Professor of Film and Media Studies* (history and critical theory of U.S. television, popular film, and media; politics of geography, race, gender, and sexuality in popular culture; cultural studies)

Claire Jean Kim, Ph.D. Yale University, *Associate Professor of Asian American Studies and Political Science* (racial and ethnic politics, protest and social movements, contemporary political theory)

Donald McKayle, Choreographer/Director, *Professor Emeritus of Dance* (choreography, modern dance)

Ngugi wa Thiong'o, *UCI Distinguished Professor of Comparative Literature and English* (African literature, the politics of culture, performance theory, language in postcolonial theories)

R. Radhakrishnan, Ph.D. State University of New York, Binghamton, *Professor of English and Comparative Literature* (critical theory, cultural studies, twentieth-century literature, diasporic and ethnic literatures and theories)

Jared Sexton, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and of Film and Media Studies* (race and sexuality, policing and imprisonment, contemporary U.S. cinema and political culture, multiracial coalition, critical theory)

Darryl Taylor, D.M.A. University of Michigan, *Associate Professor of Music* (vocal arts)

Frank B. Wilderson III, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and Drama* (film theory, Marxism, dramaturgy, black political theory)

Tiffany Willoughby-Herard, Ph.D. University of California, Santa Barbara, *Assistant Professor of African American Studies* (South Africa, poor whites, Carnegie Commission, race and wealth inequality, race in U.S. foreign policy, comparative racial politics, black political thought and comparative political thought, third world feminisms, feminist pedagogy, decolonizing theory, community and civic engagement)

Undergraduate Program

African American Studies is an interdisciplinary program which offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora. The program's curriculum encourages students to investigate the African American experience from a variety of disciplinary perspectives and theoretical approaches. Among the topics explored in the course offerings are the process of colonization and the forced migration of African people, the positionality of African

people in the racialized symbolic and social orders of the western hemisphere, the rhetoric produced by and about African people, and the cultural and aesthetic values associated with "blackness" and "Africanness." The Program offers a B.A. degree program in African American Studies and a minor.

CAREER OPPORTUNITIES

UCI graduates with a B.A. degree in African American Studies enhance their chances of success in the job market and in the highly competitive arena of graduate and professional school admissions, especially in the fields of medicine and other health professions, law, and business. Employers and admissions officers understand that many of their employees and graduates will one day work in communities with significant African American populations, and for this reason they give due consideration to applicants who have in-depth knowledge of African American culture.

REQUIREMENTS FOR THE B.A. DEGREE IN AFRICAN AMERICAN STUDIES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Requirements for the Major

A. African American Studies 40A, 40B, 40C.

B. Five courses, one from each of the following five rubrics: Humanities (African American Studies 110–119), Gender/Sexuality (120–129), History (130–139), Fine Arts (140–149), and Social Sciences (150–159).

C. Four upper-division electives selected from the five rubrics listed above.

D. African American Studies 162, taken in satisfaction of the upper-division writing requirement, and African American Studies 163.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI.

Requirements for the Minor

African American Studies 40A, 40B, 40C and four upper-division courses chosen from four of the following five rubrics: Humanities (African American Studies 110–119), Gender/Sexuality (120–129), History (130–139), Fine Arts (140–149), and Social Sciences (150–159).

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Courses in African American Studies

***(Schedule of Classes* designation: AfAm)**

LOWER-DIVISION

40A, B, C African American Studies I, II, III (4, 4, 4). Introduction to the main contours of the African American experience, from the importation of Africans into the Americas to the present. **40A:** Discusses main contours of African American experience from the forced importation of Africans into the Americas in the late fifteenth century to the development of social movements in post-emancipation societies of the late nineteenth and twentieth centuries. **40B:** Introduction to the history of modern racial thinking in Western society and its relationship to the material contexts of racial oppression, with emphasis on its development in British colonies and U.S. **40C:** Introduction to theories of racial blackness in the modern world, with emphasis on developments in British colonies and U.S. Traces emergence of blackness as term of collective identity, social organization, and political mobilization. **(III** or **IV; VII)**

50 Introductory Topics in African American Studies (4). Introduction to a broad range of topics in African American studies, exploring history, literature, art, culture, politics, and contemporary social issues. Topical organization of courses addresses issues that have been of importance historically and are reshaping the African diaspora today. May be repeated for credit as topics vary.

UPPER-DIVISION

HUMANITIES

111A African American Art: 1619–1929 (4). Investigates the history and aesthetics of African American art with an emphasis on the politics of cultural representation. Same as Art History 164A. **(VII)**

111B African American Art: 1930–Present (4). Investigates the history and aesthetics of African American art with an emphasis on the politics of cultural representation. Same as Art History 164B. **(VII)**

112A Early African American Literature (4). Examines the earliest forms of black literary practices, including the jeremiad, the slave narrative, the novel, the pamphlet, poetry, the short story. How are these literary forms related to the historical experiences of enslavement and emancipation? May be taken twice for credit as topics vary.

112B African American Literature 1900–Present (4). Examines individual literary forms and/or authors, as well as movements such as the Harlem Renaissance and the Black Arts Movement. How does black literary practice represent the conditions of modern subjectivities and environments? May be taken twice for credit as topics vary.

113 African American Cinema and Media (4). Explores the diversity of Black creative production and the historical, social, and economic forces that shaped their emergence. May include Black film, hip-hop culture, fine art, photography, and others. May be taken twice for credit as topics vary.

114 International Cultures (4). Explores the various cultures of the African diaspora and their impacts on a global scale. Examines a diverse range of media, including music (reggae, hip-hop), literature, film, and others and the links between culture and social movements throughout the diaspora. May be taken twice for credit as topics vary.

115 Race and Visual Representation (4). Examines film, documentary, fine art, photography, and other visual media to explore the multiple ways in which ideas about race are projected and woven through the visual landscape and the impacts this has on perpetuating social inequalities. May be taken twice for credit as topics vary. Formerly African American Studies 131.

116 African Literatures (4). Examines literary figures, forms, and movements of African societies. How do these literatures represent indigenous cultural practices, the conditions of modernity, and the relations between both? May be taken twice for credit as topics vary.

117 Asian American and African American Relations (4). Addresses relationships of Asian American and African American communities in the United States. Topics include race, class, gender, labor, economic systems, political mobilization, community, civil rights, activism, cultural expression. Same as Asian American Studies 167 and History 152B. **(VII)**

118 Topics in African American Humanities (4). Provides students with an opportunity to pursue advanced work in African American studies from one or more humanities approaches (literature, film and media studies, art history, and others). May be taken twice for credit as topics vary.

GENDER/SEXUALITY

120 African American Feminist Theory (4). Explores the development of African American feminist thought through the waves of American feminism from the nineteenth century through the present. Topics include analyses of sexism, racism, and heterosexism across a variety of disciplines including history, literature, and the arts.

122 African American Masculinities (4). Examines historical construction of black masculinities in various regions and periods. Interrogates especially representations of black men and boys in U.S. culture and society in relation to broader politics of race, class, gender, and sexuality.

123 African American Queer Theory (4). Explores intersections of African American studies, women's studies, gay and lesbian studies, and queer theory to challenge dominant views of race, gender, and sexuality. Considers historical and social scientific approaches to topic as well as arts and humanities.

124 Race and Gender (4). Examines the social construction of the categories of race and gender in the international and national contexts of African American communities. Texts address the intersection of economic, social, and scientific theories of difference that formed each category in various historical contexts. May be taken twice for credit as topics vary.

128 Topics in Gender/Sexuality (4). Expressions of genders and sexualities across the spectrum of African American experience and creativity. May be taken twice for credit as topics vary.

HISTORY

132A New World Slave Societies (4). Examines the origins, development, operation, and end of slave societies in the Americas, including the pattern and forms of slave resistance. Focuses primarily upon the U.S., the Caribbean (Hispanic and non-Hispanic), and Brazil. Same as History 150C.

132B Slavery in the United States (4). Explores the origins, development, and operation of the institution of slavery in the U.S. from colonial times to the end of the Civil War. Experiences in the North and South are explored, right through to the end of slavery. Same as History 150D.

133A Early African American History (4). Introduction to the main social, political, and political contours of the African American experience from the importation of Africans into the Americas, from the seventeenth through the eighteenth centuries. May be taken twice for credit as topics vary. Same as History 150A.

133B African American History 1900–Present (4). Examines different dimensions—economic, cultural, political, and social—of the African American experience since 1900, including pattern and forms of struggle against racist oppression and exploitation. May be taken twice for credit as topics vary. Same as History 150B.

134A Caribbean History: Colonization to Emancipation (4). Exploration of the history of the archipelago from pre-Columbian times to the end of slavery; examining the impact of European colonization, decimation of the indigenous populations, African slavery, resistance, and emancipation; the unity and diversity of experience in region. Same as History 164A.

134B Caribbean History: Emancipation to Independence (4). Post-emancipation and anti-colonial struggles ending with political independence for most of the region. Examines social, political, economic, cultural dimensions of post-emancipation period, including large-scale migration to Central America, the U.S., and Britain; the region's global cultural and political contribution. Same as History 164B.

137 History of the African Diaspora (4). Examines the causes and consequences of the multiple diasporas of African peoples since the sixteenth century in the Atlantic world, especially the Americas and Europe. Same as History 134E.

138 Topics in African American History (4). May be taken twice for credit as topics vary. Same as History 150. **(VII)**

FINE ARTS

141 Topics in African American Dance (4). Offers experience in the rehearsal and performance of African diasporic dance and movement. May be taken twice for credit as topics vary.

142 Topics in African American Drama (4). Considers African American theatrical performance and production, including acting, design and production, dramaturgy, criticism and theory, and stagecraft. May be taken twice for credit as topics vary.

143 Topics in African American Music (4). Examines African American musical forms and traditions, such as blues, jazz, and reggae, in performance and/or critical and theoretical contexts. May be taken twice for credit as topics vary.

144 Topics in Expressive Forms (4). Examines various forms of aesthetic expression in the African diaspora, including dance, music, and the plastic arts, as well as artistic visions of black cyberspace, digital activism, film, video, and aesthetic conceptions of the future. May be taken twice for credit as topics vary. Formerly African American Studies 160.

148 Advanced Studio Topics (4). Provides an intensive and specialized working environment for practice of a variety of fine arts as practiced in African American traditions; painting, drawing, sculpture, photography, video, music, digital arts, and performance. May be taken twice for credit as topics vary.

SOCIAL SCIENCES

151 Comparative Minority Politics (4). Examines the political experiences of Blacks, Latinos, and Asian Americans in the United States from roughly 1950 to the present. Focuses on how each group has pursued political empowerment via both conventional political channels and social movements. Same as Asian American Studies 132, Chicano/Latino Studies 147, and Political Science 124C. **(VII)**

152 African American Politics (4). Examines the politics of African Americans in order to gain a broader perspective of the American political process. Major developments in African American politics (including the civil rights movement, Black presidential bids), continuing problem of racism, responsiveness of key governing institutions. Same as Political Science 124E. Formerly African American Studies 121.

153 African American Psychology (4). Historical overview of the development of black psychology and the African American frame of reference. Topics include personality development, psychological assessment, issues in education, black mental health, and the role of the African American psychologist in the community. Same as Psychology 174E. **(VII)**

154 African American Social Formations (4). Topics which promote critical investigation into the historical, political, and social formations associated with the Black Diaspora. May be taken twice for credit as topics vary.

155 Intercultural Studies (4). Studies relationships between various cultural formations within the Black Diaspora, and the exchange, amalgamations, and tensions between Black Diasporic formations and non-Black formations. Examines expressions of racialization as representation, adaptation, and resistance. May be taken twice for credit as topics vary.

156 African Societies and Politics (4). Examines the violent incorporation of Africa within European modernity. Places the discourses of Pan-Africanism, African Nationalisms, Negritude, African Marxism, and/or African Socialism in juxtaposition to the forces of capitalism, colonialism, and imperialism that restructure African history. May be taken twice for credit as topics vary.

158 Topics in African American Social Sciences (4). Provides students with an opportunity to pursue advanced work in African American studies from one or more social science approaches (psychology, sociology, anthropology, economics, and others). May be taken twice for credit as topics vary.

OTHER COURSES

162 The Black Protest Tradition (4). History and discourses of the black protest tradition. Traces the emergence of black protest against racial slavery and white supremacy from the early colonial period to the present and the complex elaboration of identity politics within black communities in the twentieth century. Prerequisites: satisfactory completion of the lower-division writing requirement; upper-division standing. Formerly African American Studies 139.

163 Seminar in African American Studies (4). Explores theoretical and methodologies issues in Black Studies via concentrated work on a specific ensemble of questions. Emphasis is on generating student responses to the material covered through oral and written reports. May be taken twice for credit as topics vary.

198 Directed Group Study (1 to 4). Special topics through directed reading. Paper required. Prerequisite: consent of instructor. May taken for credit for a total of 24 units.

199 Independent Study (1 to 4). Investigation of special topics through directed reading. Paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE

399 University Teaching (4) F, W, S. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

DEPARTMENT OF ART HISTORY

2000 Humanities Gateway; (949) 824-6635
Cécile Whiting, **Department Chair**

Faculty

George Bauer, Ph.D. Princeton University, *Professor Emeritus of Art History* (Renaissance and Baroque)
Linda Freeman Bauer, Ph.D. Institute of Fine Arts, New York University, *Professor Emerita of Art History* (Renaissance and Baroque)
Julia Bryan-Wilson, Ph.D. University of California, Berkeley, *Associate Professor of Art History* (contemporary art and visual culture, feminist and queer theory, performance video)
Bridget R. Cooks, Ph.D. University of Rochester, *Assistant Professor of African American Studies and Art History* (African American art and culture, Black visual culture, museum criticism, film, feminist theory and postcolonial theory)
Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History* (Byzantine and Medieval art)
James D. Herbert, Ph.D. Yale University, *Professor of Art History* (modern European art)
Judy C. Ho, Ph.D. Yale University, *Professor Emerita of Art History* (Chinese art, archaeology, common religion, Buddhist art)
Philip Leider, M.A. University of Nebraska, *Senior Lecturer with Security of Employment Emeritus, Art History*
Lyle Massey, Ph.D. University of California, Los Angeles, *Associate Professor of Art History* (Renaissance and early modern art)
Margaret M. Miles, Ph.D. Princeton University, *Professor of Art History and Classics* (Greek and Roman art, archaeology)
Alka Patel, Ph.D. Harvard University, *Assistant Professor of Art History* (Asian art, South Asian architecture)
Amy Powell, Ph.D. Harvard University, *Assistant Professor of Art History* (Northern European art and visual culture, 1300–1700)
Sally A. Stein, Ph.D. Yale University, *Professor Emerita of Art History* (American art, history of photography, feminist theory)
Dickran Tashjian, Ph.D. Brown University, *Professor Emeritus of Art History* (American art and literature, American and European avant-garde, art and technology)
Cécile Whiting, Ph.D. Stanford University, *Department Chair and Professor of Art History* (American art and culture)
Bert Winther-Tamaki, Ph.D. Institute of Fine Arts, New York University, *Associate Professor of Art History* (Modern Japanese art, Asian American art, art and nationalism)
Roberta Wue, Ph.D. Institute of Fine Arts, New York University, *Assistant Professor of Art History* (modern Chinese visual culture)

Undergraduate Program

The Department of Art History offers a major and minor in Art History, and administers an interdisciplinary minor in Archaeology. Art History is the study of works of art and other visual artifacts from all regions of the world and all periods of history. Consequently, the undergraduate curriculum in Art History, with its global perspective, is one of the most diverse disciplines in the humanities. Through Art History students learn how to describe and interpret a range of objects including sculpture, painting, photography, architecture, and so-called "new media" such as video and performance art. These skills, along with the program's intense focus on writing and verbal expression, prepare students to think critically and to express themselves clearly at a time when visual communication is becoming ever more important. Because works of art are always created within a larger cultural context, Art History courses are a good way to understand what other places or times were like. Students may explore, for example, ancient Greece, nineteenth-century Japan, or even the twenty-first century United States. Majors in Art History are thus welcome to take related courses in other fields of the humanities. Students are encouraged to pursue the study of language beyond the minimum requirements, and because of its international perspective, Art History is a particularly good major for students interested in studying abroad. There are many study centers throughout the world associated with the University's Education Abroad Program. Special scholarships are available for the Pacific region program.

CAREERS FOR THE ART HISTORY MAJOR

Following their graduation, students with a B.A. in Art History have found employment in art galleries, auction houses, and museums, and they have entered graduate programs with a view to careers in university teaching, curatorial work, and art conservation. Moreover, with its strong emphasis on developing critical skills in writing, speaking, and analysis, Art History also provides an excellent preparation for many other careers. UCI graduates have pursued professional paths ranging from medicine and law, to business and education, to information technologies and architecture. As in the case of arts administration or intellectual property law, some of these professional pursuits have depended on and continue to make use of training in the arts.

REQUIREMENTS FOR THE B.A. DEGREE IN ART HISTORY

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the Major

A. One year-long Art History introductory series: either 40A, 40B, 40C *or* 42A, 42B, 42C.

B. Eight upper-division Art History courses, with at least one course in Asian art history (150–163) and at least one course in four of the following five areas: Ancient art history (100–109); Medieval art history (110–119); Renaissance/Baroque art history (120–129); Modern art history (130–149, 183); and American art history (163–169).

C. Art History 190, taken for upper-division writing credit.

D. Completion of one of the following:
   1. Two quarters of Art History 198; *or*
   2. One quarter of Art History 198 and one additional upper-division course selected from the list in requirement B above.

Students should enroll in Art History 190 (for upper-division writing) as early as possible in their junior year, after successfully completing UCI's lower-division writing requirement. It is strongly recommended that students complete Art History 190 before taking Art History 198.

Residence Requirement for the Major: Five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor in Art History

A. One year-long Art History introductory series: either 40A, 40B, 40C *or* 42A, 42B, 42C.

B. Three upper-division Art History courses chosen from three of the following six areas: Ancient art history (100–109), Medieval art history (110–119), Renaissance/Baroque art history (120–129), Modern art history (130–149, 183), Asian art history (150–163), and American art history (163–169).

C. Completion of one of the following:
   1. One quarter of Art History 198; *or*
   2. One additional upper-division course, in one of the three areas already selected by the student in satisfaction of requirement B above.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the department chair.

Minor in Archaeology

The interdisciplinary minor in Archaeology introduces students to modern archaeological theory and practice. Students are exposed to different approaches and theoretical frameworks used in the reconstruction of cultures based on their material remains and examine the use of such approaches and frameworks in a comparative context that emphasizes one geographic area. Students also become familiar with the importance of understanding the historical, geographic, and environmental contexts in which a particular material culture develops and transforms. The minor helps to prepare students for advanced training in art history, the archaeology of specific geographical regions, cultural resource management, museum studies, and historical preservation. It emphasizes classical and historical archaeology of the last 5,000 years of human history.

Requirements for the Minor in Archaeology

Completion of seven courses (28 units). Only one course from requirements D–F may be lower division.

A. Anthropology 2C.

B. One lower-division survey course on the pre-modern world selected from Anthropology 41A; Art History 40A, 42A; History 21A.

C. One upper-division social theory course selected from Anthropology 125B, 136B; History 102B; Women's Studies 156B, 165A.

D. One course on the social study of scientific inquiry selected from Anthropology 128A; History 60; Women's Studies 50A, 50B, 60A.

E. Geographic specialty: two courses focusing on one particular area from the requirement F list.

F. Geographic subspecialty: one course from the list below on an area outside the student's geographic specialty.

Africa and Asia: Art History 150, 152, 175; History 130A, 131, 134A, 170D.

Greece and Rome: Art History 100, 103, 107; Classics 36A, 36B, 36C, 37A, 37B, 37C, 140; History 105A, 105B, 105C.

Americas: Anthropology: 141A, 149, 162A, 162B; Art History 164A, 175; History 151A, 161A.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program provided course content is approved in advance by the Humanities Undergraduate Study Office.

Graduate Study

In conjunction with the Department of Film and Media Studies, the Department of Art History offers a graduate program in Visual Studies. A program description and graduate courses may be found in the Program in Visual Studies section, toward the end of the School of Humanities section.

Courses in Art History

***(Schedule of Classes* designation: Art His)**

LOWER-DIVISION

Lower-division courses provide a comprehensive introduction to broad fields of art history, knowledge of some of the most influential monuments of human history, and an acquaintance with basic methods that art historians use to interpret artifacts in many media from many cultures.

40 History of Western Art. A year-long survey of art and culture in the West from prehistory to the present.

40A Ancient (4) F. An overview of prehistoric, Egyptian, Greek, and Roman art. Considers how and why the peoples of antiquity created art and architecture, as well as the significance within its social, religious, and historical contexts. **(IV, VIII)**

40B Medieval and Renaissance (4) W. Focuses on the art of the Mediterranean area and Europe between ca. A.D. 350 and 1600. By means of movements and artists, examines the cultural identities of the Christian, Islamic, and early modern worlds. **(IV, VIII)**

40C Baroque and Modern (4) S. The visual arts from the seventeenth to the twentieth centuries. Explores the changing social purposes and meaning of painting, sculpture, and architecture in relation to historical events and to the artists who made them. **(IV, VIII)**

42A, B, C History of Asian Art (4, 4, 4) F, W, S. A one-year survey of painting, sculpture, architecture and other artifacts in various regions of Asia. Starts with prehistory in 42A (fall quarter) and concludes with modern art in the twentieth century in 42C (spring quarter). Topics include neolithic excavations, pan-Asiatic transmissions of art, developments of art in India, China, and Japan. *Each course may be taken separately or as part of the series.* **(IV, VIII)**

UPPER-DIVISION

Upper-division courses explore a wide variety of aims and methods —archaeological, historical, and critical—in the study of art. Deeper understanding is obtained by focusing on shorter historical periods, specific cultural contexts, developments in particular media, or certain theoretical problems.

100 Studies in Ancient Art (4). Topics in Egyptian, Prehistoric, and Etruscan art of the Mediterranean area treated with specific reference to relevant cultural and historical settings. Specialized courses in Greek and Roman art are also taught. May be repeated for credit as topics vary.

103 Studies in Greek Art (4) F, W, S. Topics in Greek art, architecture, and topography from the Prehistoric period through the end of the fourth century B.C.E. May be repeated for credit as topics vary.

107 Studies in Roman Art (4) F, W, S. Topics in Hellenistic and Roman art and architecture; stresses historical and political background. May be repeated for credit as topics vary.

110 Studies in Medieval Art (4) F, W, S. Specialized topics in Medieval art and architecture in Europe, the Mediterranean area, and the Near East between the fourth and fifteenth centuries. Examples: the art of the Migration Period, Medieval City. May be repeated for credit as topics vary.

112 Studies in Early Christian and Byzantine Art (4) F, W, S. Selected topics on the development of the art and architecture of the Later Roman and Byzantine Empires between ca. 300 and 1453. Examples: Early Christian architecture, Byzantine painting. May be repeated for credit as topics vary.

114 Studies in Western Medieval Art (4) F, W, S. Selected topics on the development of art and architecture in Western Europe between ca. 700 and 1400. Examples: Romanesque painting, Gothic architecture. Same as Humanities 110 when topic is appropriate. May be repeated for credit as topics vary.

118 Studies in Medieval Islamic Art (4) F, W, S. Selected topics on the development of art and architecture between the seventh and fifteenth centuries A.D. (first to ninth centuries A.H.) in the Eastern Mediterranean and the Near East after the rise of Islam. May be repeated for credit as topics vary.

120 Studies in Renaissance and Baroque Art (4) F, W, S. Selected topics on the art and architecture of Europe between the fifteenth and eighteenth centuries. Examples: Renaissance and Baroque prints, Bruegel to Rubens. May be repeated for credit as topics vary.

121 Studies in Southern Renaissance Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the fifteenth and sixteenth centuries in Italy and Spain. Examples: Renaissance Venice, Age of Michelangelo. May be repeated for credit as topics vary.

123 Studies in Northern Renaissance Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the fifteenth and sixteenth centuries in Northern Europe. Examples: Late Medieval art, painting from Van Eyck to Bosch. May be repeated for credit as topics vary.

125 Studies in Southern Baroque Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the seventeenth and eighteenth centuries in Italy and Spain. Example: Rome in the seventeenth century. May be repeated for credit as topics vary.

128 Studies in Northern Baroque Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the seventeenth and eighteenth centuries in Northern Europe. Example: the Age of Rembrandt. May be repeated for credit as topics vary.

130 Studies in Eighteenth-Century Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the eighteenth century. Examples: English art, Neoclassicism. May be repeated for credit as topics vary.

134 Studies in Modern European Art. F, W, S. Topics within the period 1643 to 1940. Works of art are studied as cultural, social, and political practices.

134A European Art: 1643–1789 (4)

134B European Art: 1789–1851 (4).

134C European Art: 1851–1907 (4).

134D European Art: 1907–1940 (4).

134E Topics in Modern European Art (4). Varies with each offering. Consult with the instructor for specific topic. May be repeated for credit as topics vary.

140 Studies in Contemporary Art. F, W, S. Varying topics within the period 1940 to the present. Works of art are studied as cultural, social, and political practices. May be repeated for credit as topics vary.

140A History of Contemporary Art (4)

140B Issues of Contemporary Art (4)

140C Theories of Contemporary Art (4)

145 Studies in the History of Modern and Contemporary Architecture. F, W, S. Varying topics from the late eighteenth century to the present. Architecture and related design practices are studied in relation to social, aesthetic, technological, and political questions. May be repeated for credit as topics vary.

145A Modern Architecture (4)

145B Architecture after 1945 (4)

145C Various Topics (4)

150 Studies in Asian Art (4) F, W, S. Topics include visual studies in China, Japan, Korea, and India. May be repeated for credit as topics vary.

152 Studies in Chinese Art and Religion (4) F, W, S. A study of the rich archaeological finds in mainland China (including tombs and temples) and the development of religious beliefs from the Neolithic through the imperial periods. May be repeated for credit as topics vary.

153 Studies in Early Chinese Painting (4) F, W, S. An examination of the major traditions in painting from the fourth through the thirteenth centuries and the parallel developments in art theory. May be repeated for credit as topics vary.

154 Studies in Later Chinese Painting (4) F, W, S. New developments in Yuan, Ming, and Qing, through modern periods. May be repeated for credit as topics vary.

155 Art of South Asia

155A Art of South Asia: Fourth Century B.C. to Seventh A.D. (4). Examines the visual history of the region defined as "India" today, but necessarily encompassing modern Bangladesh and Pakistan. Culminates with the supposed Golden Age of the Gupta empire and its far-reaching legacies. **(VIII)**

155B Art of South Asia: Eighth Century A.D. to Sixteenth Century A.D. (4). Begins with the Gupta Period's aesthetic legacies in South Asia's architecture, sculpture, and painting. Goes on to explore the dispersal of Islam throughout South Asia, including the Muslim communities of southern India. **(VIII)**

155C Art of South Asia: Sixteenth Century A.D. to Twentieth-first Century A.D. (4). Examines the imperial patronage of the Mughal emperors, covering their territorial holdings extending from Afghanistan through western Bangladesh. Continues with the "aftermath" of the Mughal empire and the rise of British commercialism and colonialism. **(VIII)**

155D Topics in the Art and Architecture of South Asia (4). May be repeated for credit as topics vary. **(VIII)**

162 Later Japanese Art and Design. Explores stylistic and technical developments in Japanese visual culture. A cross-section of media such as architecture, crafts, painting, photography, and sculpture are studied in relation to Japanese social and political history.

162A Japanese Art: 1615–1868 (4). (VIII)

162B Japanese Art: 1868–1945 (4). (VIII)

162C Japanese Art: 1945–Present (4). (VIII)

163 Asian American Art History (4). F, W, S. Investigation of the Asian American experience expressed by art and visual culture through the twentieth century. Art by Asian Americans of diverse backgrounds as well as the history of visualization of Asian identities in American art/visual culture. May be repeated for credit as topics vary. **(VII)**

164 African American Art

164A African American Art: 1619–1929 (4). Investigates the history and aesthetics of African American art with an emphasis on the politics of cultural representation. Same as African American Studies 111A. **(VII)**

164B African American Art: 1930–Present (4). Investigates the history and aesthetics of African American art with an emphasis on the politics of cultural representation. Same as African American Studies 111B. **(VII)**

164C Topics in African American Art (4). May be repeated for credit as topics vary.

165 Studies in American Art. F, W, S. Varying topics within the period 1620 to 1950. Works of art are studied in their cultural, social, and political contexts.

165A American Art: 1620–1800 (4)

165B American Art: 1800–1900 (4)

165C American Art: 1900–1950 (4)

165D Topics in American Art (4). Varies with each offering. Consult instructor for specific topic. May be repeated for credit as topics vary.

167 Latin American Art History (4) F, W. S. Historical periods vary with each offering and may range from pre-Columbian societies, through the colonial era, to developments in modern and contemporary art. May be repeated for credit as topics vary. **(VIII)**

175 Studies in Native and Tribal Art (4) F, W, S. Varying topics on the art and culture of native and tribal societies. For example, North American Indians. May be repeated for credit as topics vary.

180 Topics in the Criticism of Art (4) F, W, S. Selected topics discussed on the theoretical and/or practical dimensions of art historical criticism. May be repeated for credit as topics vary.

181 Topics in Museum Studies (4). F, W, S. Addresses the historical and contemporary function of the museum as an instructional device. The function of exhibitions in the public sphere, and the roles of curators, educators, and the public are analyzed. May be repeated for credit as topics vary.

183 Studies in the History of Photography. F, W, S. Varying topics within the history of photography from the early nineteenth century to the present. Photographic practice studied in relation to art history, cultural history, and social history. May be repeated for credit as topics vary.

183A Nineteenth-Century Photographic History (4)

183B Twentieth-Century Photographic History (4)

183C Selected Topics in Photographic History (4). Examples: documentary; pictorialism and art photography; photomontage, photographic books.

185 Topics in Visual Studies (4) F, W, S, Summer. Interdisciplinary topics on the cultural analysis of visual artifacts and practices. May be repeated for credit as topics vary.

190 Practicum for Majors (4) W. Theory and practice of art history with emphasis on formal and social models of analyzing and writing about art. Prerequisite: satisfactory completion of the lower-division writing requirement. Enrollment restricted to upper-division Art History majors.

195A-B Senior Research. Students undertake a senior research project under the individual supervision of an Art History faculty member.

195A Senior Research (4) F, W, S. With consultation in regularly scheduled meetings, students select a topic, identify and study relevant texts and materials, and prepare a prospectus for an original thesis. In-progress grading. Prerequisite: Art History 190.

195B Senior Research (4) F, W, S. Students submit an outline and preliminary drafts of section of their paper to the instructor, on a schedule supervised by the instructor. Final 20-page paper includes revisions addressing the instructor's comments and criticisms. Prerequisite: Art History 195A.

198 Proseminar in Art History (4) F, W, S. Discussion and report-oriented seminar with emphasis on reading, writing, and thinking about problems in art history. Topics vary according to the faculty/instructor. Examples: Gothic Cathedral, Portraiture East and West. Prerequisite: upper-division Art History major or consent of instructor. Prior completion of Art History 190 is strongly recommended. May be repeated for credit as topics vary.

199 Independent Study in Art History (1 to 4) F, W, S. Supervised, but independent reading or research on art historical topics. Prerequisite: consent of supervising instructor. May be taken for credit four times.

GRADUATE

Graduate courses satisfying the requirements of the graduate program in Visual Studies are listed in the Visual Studies section of the *Catalogue*. Graduate students may also enroll concurrently in any upper-division lecture class with the approval of the instructor.

399 University Teaching (4) F, W, S. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

DEPARTMENT OF ASIAN AMERICAN STUDIES

3000 Humanties Gateway; (949) 824-4523

Core Faculty

Christine B. Balance, Ph.D. New York University, *Assistant Professor of Asian American Studies* (Filipino American studies, performance studies, Asian American popular culture, and queer theory)

Yong Chen, Ph.D. Cornell University, *Associate Professor of History* (Asian American history)

Dorothy Fujita-Rony, Ph.D. Yale University, *Associate Professor of Asian American Studies* (U.S. history, Asian American studies)

Claire Jean Kim, Ph.D. Yale University, *Associate Professor of Asian American Studies and Political Science* (racial and ethnic politics, protest and social movements, contemporary political theory)

James Kyung-Lee, Ph.D. University of California, Los Angeles, *Associate Professor of Asian American Studies and English* (Asian American literature, urban studies, modern social movements, U.S. political economy)

John M. Liu, Ph.D. University of California, Los Angeles, *Senior Lecturer with Security of Employment, Asian American Studies* (race/ethnic/minority relations; economy and society)

Glen Mimura, Ph.D. University of California, Santa Cruz, *Associate Professor of Film and Media Studies* (minority, diasporic, and third cinemas; cultural studies of media, nationalism, and globalization; queer theory and racialized sexuality)

Linda Trinh Võ, Ph.D. University of California, San Diego, *Associate Professor of Asian American Studies* (race and ethnic relations, immigrants and refugees, gender relations, and community and urban studies)

Affiliated Faculty

Kei Akagi, B.A. International Christian University, *UCI Chancellor's Professor of Music*

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Department Chair of Women's Studies and Associate Professor of Women's Studies, Comparative Literature, and English*

Kyung Hyun Kim, Ph.D. University of Southern California, *Associate Professor of East Asian Languages and Literatures*

Jennifer Lee, Ph.D. Columbia University, *Associate Professor of Sociology*

Stephen Lee, J.D. University of California, Berkeley, *Acting Professor of Law*

Daphne Pi-Wei Lei, Ph.D. Tufts University, *Associate Professor of Drama*

Simon Leung, B.A. University of California, Los Angeles, *Professor of Studio Art*

Sanjoy Mazumdar, Ph.D. Massachusetts Institute of Technology, *Professor of Planning, Policy, and Design and of Environmental Health, Science, and Policy*

Yong Soon Min, M.F.A. University of California, Berkeley, *Professor of Studio Art*

Bert Winther-Tamaki, Ph.D. Institute of Fine Arts, New York University, *Associate Professor of Art History*

The Department of Asian American Studies examines the historical and contemporary experiences of Asians in the United States and in a global context. The curriculum seeks to provide an analysis of the cultural, political, and economical organization of Asian American communities. Students are invited to participate and partake in broadening their understanding of multicultural perspectives within U.S. society. The Department offers a B.A. degree program in Asian American Studies, an honors program, a minor, and a graduate emphasis. The Department also contributes to the Culture and Theory Ph.D. program, which uses the strengths of interdisciplinary programs and departments, particularly African American Studies, Chicano/Latino Studies, Asian American Studies, Critical Theory, and Women's Studies. This interdisciplinary degree uses a problem-oriented rather than a disciplinary approach to issues of race, gender, and sexuality in relation to diasporas, transnational, and postcolonial contexts, all of which are broadly based in the humanities, social sciences, and arts.

In addition to regular UCI faculty, lecturers who teach on a quarterly basis are an integral part of the Department. A current list of participants is available in the office.

Scholarship Opportunities. The Ching-Suei Su Endowed Memorial Scholarship is awarded annually to sophomores or juniors who are majoring in Asian American Studies, East Asian Languages and Literatures, or Linguistics (with an emphasis on an East Asian language) and who demonstrate academic excellence and campus or community service.

Undergraduate Program

CAREER OPPORTUNITIES

Many career opportunities exist for students who graduate with a B.A. degree in Asian American Studies, such as service with national and international organizations which seek knowledge of American multicultural society in general, and of Asian American peoples and cultures in particular; positions as area specialists with state and federal government agencies; careers in the private sector with corporations or private organizations which have a significant portion of their activities in the U.S. and the Pacific Rim; and positions of service and leadership within Asian American communities. Students may also continue their education and pursue professional or graduate degrees.

REQUIREMENTS FOR THE B.A. DEGREE IN ASIAN AMERICAN STUDIES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the Major

A. Five core courses: Asian American Studies 60A, 60B, 60C, 100 (taken to satisfy the upper-division writing requirement), 101.

B. Eight upper-division electives (two from each of the following areas): Asian American Studies 110–129 (Humanities/Arts), 130–149 (Social Science/Social Ecology), 151–160 (Asian American Sub-groups), 161–170 (Ethnic/Race/Gender Relations).

C. One course in history, cultural, or political institutions of Asia selected from the following departments: Anthropology, Art History, East Asian Languages and Literatures, Film and Media Studies, History, Philosophy, Political Science, Sociology, Studio Art.

D. One elective course selected from Asian American Studies or from the interdisciplinary programs in African American Studies, Latin American and Caribbean Studies, or Women's Studies. Electives may include four-unit Independent Studies/Special Studies courses: Asian American Studies 190–199. Students may request, by petition, one lower-division course to count as an elective. This course must be primarily focused on issues relevant to Asian American Studies.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI.

Honors Program in Asian American Studies

The Honors Program in Asian American Studies provides an opportunity for outstanding students to develop their research skills through an intensive study of a topic that is of special interest to them. The program is open to senior Asian American Studies majors who have a 3.3 GPA in Asian American Studies (at least five courses) and a 3.0 GPA overall, and who have successfully completed Asian American Studies 100 (Research Methodologies) before spring quarter of their junior year.

Honors students participate in a three-part sequence, Asian American Studies H190A-B-C, in which they develop research skills, pursue fieldwork, and complete an honors thesis on a topic of their choice under the guidance of a departmental faculty member. During fall quarter, the first part of this sequence introduces students to a range of key methodological issues in Asian American Studies. In the second part, students work closely with their Faculty Advisor to develop research and writing skills; the first draft of their thesis is to be completed at the end of winter quarter. During spring quarter, students revise their thesis and complete it by the end of the quarter. The thesis is evaluated by the Faculty Advisor and must also be approved by the Department Chair of Asian American Studies. Upon successful completion of the sequence, students graduate with Honors in Asian American Studies.

Requirements for the Minor

A. Asian American Studies 60A, 60B, 60C, 101.

B. Four upper-division courses selected from Asian American Studies 100–169, 190–199.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the Department.

Graduate Emphasis in Asian American Studies

The Department of Asian American Studies offers a graduate emphasis in Asian American Studies, which is available in conjunction with selected departmental graduate programs. Students in the graduate emphasis complete a minimum of four courses, including Asian American Studies 200A and 200B (offered every other year), and two electives, one of which is selected from the student's own department or area of interest, and the other from a discipline outside that department or area.

Subject to the requirements of participating academic units, Ph.D. students in the emphasis should have at least one Asian American Studies core faculty member on their qualifying examination and dissertation committees. With the approval of the Asian American Studies Graduate Committee, affiliated faculty members can sit in place of the core faculty. (There are no requirements concerning qualifying examinations or theses for master's students.)

Applicants to the emphasis must be admitted to a participating UCI graduate program. For complete information about application policies and procedures, as well as the requirements of the emphasis, see one of the Asian American Studies faculty members.

Courses in Asian American Studies

(Schedule of Classes **designation: AsianAm)**

LOWER-DIVISION

60A Introduction to Asian American Studies I (4). Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as History 15C and Social Science 78A. **(III, VII)**

60B Introduction to Asian American Studies II (4). Examines the renewal of Asian immigration following World War II. Focuses on domestic and international conditions influencing the liberalization of U.S. immigration laws, and the impact of contemporary Asian immigration on the U.S. political economy and social order. Same as Social Science 78B. **(III, VII)**

60C Introduction to Asian American Studies III (4). Analyzes the Asian American experience in comparative perspective, which includes comparisons of different ethnic and racial groups, and across gender and class. Possible topics include labor, economy, politics, migration, nation, popular culture, gender, family, sexuality, and multiraciality. Same as Social Science 78C. **(III, VII)**

UPPER-DIVISION

100 Research Methodologies for Asian American Studies (4). Explores various research methodologies for Asian American Studies combining theoretical knowledge with field research. Goals: conduct field research about immigrants and refugees from Asia. Topics vary: migration and labor, assimilation and cultural preservation, cultural expressions in the diaspora. Prerequisites: satisfactory completion of the lower-division writing requirement.

101 Globalization, Diaspora, and Racialization (4). Studies the relationship between globalization and racialization and comparatively examines the racialization of Asians in the U.S. with the experiences of other Asians in the diaspora. Attention paid to the cultural expressions of racialization as creation, representation, adaptation, and resistance. Same as Social Science 177A.

110 Asian American Writers (4). Literary analysis of Asian American writers' representations of issues of identity, class, history among others. Variety of literary forms—novel, poem, drama, essay—included in a study of a variety of Asian American ethnic groups. May be repeated for credit as topics vary. **(VII)**

111 Asian American History (4). Introduction to important themes in the history of people of Asian ancestry in the United States from the nineteenth century to the present. May be repeated for credit as topics vary. **(VII)**

112 Asian American Art History (4). Investigation of Asian American experience expressed by art and visual culture throughout the twentieth century. Art by Asian Americans of diverse backgrounds as well as the history of cultural visualization of Asian identities in American art/visual culture. May be repeated for credit as topics vary. **(VII)**

114 Asian American Film and Video (4). Topics include histories of Asian American film and video, including documentaries, experimental, short subjects, feature-length independent film, and other forms of cinematic expression. Explores issues of identity (national, racial, gendered, among others). May be repeated for credit as topics vary. **(VII)**

115 Asian American Media and Arts (4). Includes the study of Asian American history and society through the analysis of a variety of media forms such as painting, music, cinema, video, and other artistic representations. May be repeated for credit as topics vary. **(VII)**

116 Asian Americans and Popular Culture (4). Focuses on Asian Americans' relationship to popular culture as both producers and consumers. Topics include consumer cultures and subcultures, cyberspace and public space, popular music, indy comics and other print media. **(VII)**

117 Sexuality in Asian and Asian American Film and Video (4). Analyzes sexuality and gender roles in specific social, historical, and political contexts represented in selected Asian and Asian American films and videos, in terms of feminine/masculine constructions, the body, family roles. **(VII)**

118 Asian American Performance and Writing (4). Intensive performing workshop producing work inspired by community, personal experience, international issues. Focuses on new ways of understanding ethnicity, class, and gender issues through performance. **(VII, IX)**

131 Asian American Politics (4). Provides various overviews of politics within Asian American communities. May compare with African American and/or Latino politics. May be repeated for credit as topics vary. **(VII)**

132 Comparative Minority Politics (4). Examines the political experiences of Blacks, Latinos, and Asian Americans in the United States from roughly 1950 to the present. Focuses on how each group has pursued political empowerment via both conventional political channels and social movements. Same as African American Studies 151, Chicano/Latino Studies 147, and Political Science 124C. **(VII)**

133 Asian American Family (4). Examines the representations and experiences of Asian American families from diverse standpoints. Analyzes the similarities and differences among family structures with particular attention to cultural values, gender roles, and domestic violence. Same as Social Science 177D. **(VII)**

134 Asian American Community Public Health (4). Focuses on major issues and concepts of community health and their application to public health programs for Asian American populations. Analyzes individual, institutional, community, and policy factors that influence a person's health status within a larger environmental context. Same as Public Health 134. **(VII)**

135 Special Topics in Asian American Social Sciences and Social Ecology (4). Explores a broad range of issues in Asian American social sciences and social ecology. May be repeated for credit as topics vary. **(VII)**

136 Asian Americans and Public Policy (4). Introduces public policy, basics of policy analysis, and current-day public policy issues. Focuses on Asian Americans in relation to immigration, welfare, urban development policies. **(VII)**

137 Asian American Labor (4). Explores history of Asian Americans and work from the nineteenth century to the present. Areas of study include migration, colonialism, family, social organization, and work culture. Same as History 152A. **(VII)**

138 Race and Urban Space (4). Examines how ethnic and racial processes shape and structure interactions in urban settings, such as schools, housing, employment, and public spaces, with attention to the international impact of globalization and postcolonial forces. **(VII)**

139 Asian Americans and Education (4). Introduces students to the major issues facing Asian Americans in K–16 education and schooling experiences through scientific, historical, and interdisciplinary approaches, in both mainstream and minority education. **(VII)**

140 Asian Americans and the Law (4). Analyzes from a legal perspective historical events and current issues related to the Asian American community. Focuses on interpreting and understanding case law. **(VII)**

141 Asian American Psychology (4). Examines the social and psychological concerns of Asian Americans; e.g., coping with racial prejudice, maintaining bicultural identities, dealing with cross-cultural conflicts in interracial relationships, and trying to reconcile generational differences between immigrant parents and their American-born children. Same as Psychology 174A. **(VII)**

142 Muslim Identities in North America (4). Explores multiple identities of Muslims in North America, including indigenous Muslims (e.g., African American Muslims and Sufis) and immigrants of many national origins. Explores religious, political, cultural, ethnic, class differences among American Muslims, turning to Islamic institutions near UCI to conduct small research projects. Same as Anthropology 125Z. **(VII)**

143 Religious Traditions of Asian Americans (4). Studies the religious traditions of Asian Americans, focusing on the transplantation of religious institutions, establishment of sacred spaces, celebration of religious holidays, socialization of children, as well as birth, marriage, gender relations, death, family. Same as Sociology 136. **(VII)**

150 Special Topics in Asian American Studies (4). Analyzes a variety of themes in Asian American Studies—identity, history, culture—from various interdisciplinary perspectives in humanities, arts, social sciences. May be repeated for credit as topics vary. **(VII)**

151 Asian American Ethnic Groups (4). Topics include study of the history, culture, and social formations of diverse Asian American subgroups such as Pacific Islanders, Hmong, Thai, Indonesian, Indian subcontinental, among others. May be repeated for credit as topics vary. **(VII)**

151C The Korean American Experience (4). Explores the factors that have distinctly shaped the Korean American experience, including patterns of racial domination, the profile of immigrant flow, immigrant roles in the urban political economy, politics in Korea, and the role of the church. Same as Social Science 178C. **(VII)**

151D The Vietnamese American Experience (4). Studies the resettlement of Vietnamese in the United States following their exodus from Southeast Asia. Topics discussed include the Vietnam War, the 1975 evacuation, boat and land refugees, the shaping of Vietnamese communities, and Vietnamese American literature. Same as Social Science 178D. **(VII)**

151E The Japanese American Experience (4). Studies the settlement of Japanese in Hawaii and the continental United States since the late nineteenth century. Topics covered include sugar plantations, development of rural Japanese America, World War II internment, post-War community development, and persistence of Japanese American identity. Same as Social Science 178E. **(VII)**

151F South Asian American Experience (4). Examines and compares the experiences of South Asian immigrants in the U.S. over time. Looks at the economic, political, and social positions of the immigrants, with special emphasis on religious changes and the changes in the second and later generations. Same as Social Science 178F.

151H Southeast Asian American Experience (4). Analyzes experiences of refugees and immigrants from Cambodia, Laos, and Vietnam. Examines political and economic factors for their exodus and how they reconstruct their identities, families, and communities. Issues include educational experiences, public policies, social services, occupational options, homeland relations. Same as Social Science 178H. **(VII)**

151J Chinese American Experience (4). Analyzes the experiences of Chinese in the United States. Immigration, Chinese exclusion, racial and gender identity. Historical overview and contemporary issues covered. Same as Social Science 178J. **(VII)**

151K Filipina/Filipino American Experience (4). Explores the experience of Filipina/Filipino Americans from the era of Spanish colonization of the Philippines to present-day community formations in the United States, with special emphasis on the twentieth century. Topics include colonialism, nation, migration, gender, and culture. Same as Social Science 178K. **(VII)**

161 Ethnic and Racial Communities (4). Examines various theoretical analyses of race and ethnicity, particularly as they apply to Asian Americans. Also explores the relationship of Asian Americans to other racialized minorities in the U.S. Same as Social Science 175B. **(VII)**

162 Asian American Women (4). Examines the representations and experiences of Asian American women from diverse perspectives. Explores the commonalities and differences among various groups of Asian American women, with particular focus on history, culture, values, and family roles. Same as Social Science 177B. **(VII)**

163 Asian American Women's Film (4). Explores the social significance of film and video made by Asian American women in relation to issues of race, representation, and social change. These film and video makers use these media to raise complex issues of class, politics, and race interacting with gender. May be repeated for credit as topics vary.

164 Special Topics in Ethnicity, Gender, and Race (4). Topics include analysis and comparison of various themes related to ethnicity, gender, and race within the Asian American communities. May be repeated for credit as topics vary. **(VII)**

166 Asian Americans and Race Relations (4). Analyzes Asian American race relations and racialized interconnections, as well as Asian Americans in racial hierarchy. Topics include racial categorization, citizenship, immigration, equity. **(VII)**

167 Asian American and African American Relations (4). Addresses relationships of Asian American and African American communities in the United States. Topics include race, class, gender, labor, economic systems, political mobilization, community, civil rights, activism, cultural expression. Same as African American Studies 117 and History 152B. **(VII)**

171A Comparative International Migration (4). Examines the migration patterns to the three largest nations that receive immigrants (i.e., permanent settlers)—Australia, Canada, and the United States. Same as Sociology 175D. **(VIII)**

H190A Asian American Studies Honors Seminar I (4). First of a three-quarter honors sequence. Students explore key methodological issues in Asian American Studies and craft their own research project. Methodologies may include library research, historical research, literary review, cultural analysis, ethnographic interviews, participant observation, and data collection. Prerequisites: successful completion of Asian American Studies 100; 3.3 GPA in Asian American Studies courses and 3.0 GPA overall.

H190B Asian American Studies Honors Tutorial II (4). In the second of the three-part honors sequence, students work closely with a Faculty Advisor on their chosen research project. Emphasis is given to the writing process. At the end of the quarter, students are to complete the first draft of their thesis. Prerequisite: Asian American Studies H190A.

H190C Asian American Studies Honors Tutorial III (4). In the last of the honors sequence, students revise their thesis based on constructive comments from their Faculty Advisor. A final draft of the thesis is evaluated by the Faculty Advisor and the Department Chair of Asian American Studies. Prerequisite: Asian American Studies H190B.

199 Independent Study (1 to 4). Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisite: consent of sponsoring faculty member. May be repeated for credit.

GRADUATE

200A Theory and Methods in Asian American Studies (4). Introduction to the interdisciplinary intersection of the social sciences, humanities, and other fields that constitute the theory and methodology of Asian American Studies. Focuses on the interventions and contestations within Asian American Studies that have transformed the discipline in recent years. Prerequisite: graduate standing.

200B Contemporary Issues in Asian American Studies (4). Examines the interrelations between history, theory, and race in the aftermath of the twentieth-century decolonial movements, offering an account of race through postcolonial and postnationalist approaches in comparative, multiregional contexts. Considers the interventions made by transnational feminist and racialized queer critiques. Prerequisite: graduate standing.

201 Graduate Topics in Asian American Studies (4). Seminars on various topics in Asian American Studies. Prerequisite: graduate standing. May be repeated for credit as topics vary.

202 Immigration and Globalization (4). Examines immigration to three leading immigrant-receiving nations: the United States, Canada, and Australia, as both cause and consequence of globalization. Specific attention to Asian migration, as well as assimilation and its relationship to multiculturalism. Prerequisite: graduate standing. Same as Sociology 266.

250 Advanced Topics in Asian American Studies (4). Seminar covering various areas of research within Asian American Studies as an interdisciplinary field. Recommended for advanced graduate students.

290 Directed Research (4 to 12). Directed graduate study/research in Asian American Studies. Prerequisite: graduate standing. May be taken for credit for a total of 24 units.

291 Directed Reading (4). Readings focused on specialized topics. Prerequisite: graduate standing and consent of instructor. May be taken for credit for a total of 12 units.

399 University Teaching (4). Limited to teaching assistants. Must be admitted to the graduate emphasis in Asian American Studies. Satisfactory/Unsatisfactory only. May be taken for credit six times.

DEPARTMENT OF CLASSICS

Humanities Office Building II; (949) 824-6735
Andrew Zissos, **Department Chair**

Faculty

Luci Berkowitz, Ph.D. Ohio State University, *Professor Emerita of Classics* (Greek literary history, computer applications to literature)
Cynthia L. Claxton, Ph.D. University of Washington, *Lecturer in Classics with Security of Employment, Undergraduate Program Director, and Graduate Advisor* (Greek prose, historiography)
Richard I. Frank, Ph.D. University of California, Berkeley, *Professor Emeritus of History and Classics* (Roman history, Classical tradition)
Zina Giannopoulou, Ph.D. University of Illinois, *Assistant Professor of Classics* (literacy theory and Platonic hermeneutics, classical and Hellenistic philosophy, Greek tragedy and epic)
Andromache Karanika, Ph.D. Princeton University, *Assistant Professor of Classics* (Greek epic poetry, Greek lyric, folklore)
Margaret M. Miles, Ph.D. Princeton University, *Professor of Art History and Classics* (Greek and Roman art, archaeology)
Maria C. Pantelia, Ph.D. Ohio State University, *Professor of Classics and Director, Thesaurus Linguae Graecae®* (Greek epic, Hellenistic poetry, digital technologies in the humanities)
James I. Porter, Ph.D. University of California, Berkeley, *Professor of Classics and Comparative Literature* (philosophy, literary and cultural criticism and aesthetics, history of the classical disciplines, reception of Homer)
Patrick Sinclair, Ph.D. Northwestern University, *Professor Emeritus of Classics* (rhetoric, Latin prose, lexicography)
Dana F. Sutton, Ph.D. University of Wisconsin, *Professor Emeritus of Classics* (Greek and Latin drama, Greek poetry, Anglo-Latin literature)
Nicholas White, Ph.D. Harvard University, *Professor Emeritus of Philosophy and Classics* (Greek philosophy, ethics, epistemology)
Andrew Zissos, Ph.D. Princeton University, *Department Chair and Associate Professor of Classics* (Latin epic, medieval Latin, Roman culture)

Undergraduate Program

The Department of Classics aims to provide the undergraduate student with a working knowledge of the origins and heritage of Greco-Roman civilization. The Department is committed to a twofold purpose: (1) disseminating interest in and knowledge of Classical Civilization through the teaching of Greek and Latin language and literature; and (2) helping students, through courses in Classical literature, history, civilization, mythology, and religion taught through English translations, to appreciate the achievements of Greek and Roman culture and their pervasive influence on our own civilization.

The Department offers majors in Classics (with an emphasis in Greek or Latin), Latin, and a major in Classical Civilization in which most of the required courses are in English translation. Students are encouraged to consult with the Classics faculty regarding the appropriate choice of major and design of their programs.

For the Classics major, study of the Classics must be based on competence in both Greek and Latin. The Classics program is designed to provide the student with this competence as rapidly as possible, so that by the end of first-year Greek or Latin the student has already been introduced to some of the major Classical authors in the original language. From then on, courses are devoted to reading and interpreting the literature of ancient Greece and Rome. In addition to their training in the languages, students increase their knowledge of the literature, history, and thought of the ancient world through the close study of some of its finest writers.

The Latin major is designed for those students who want to emphasize Rome and the Latin language as their area of study. By the end of first-year Latin, students will be reading and analyzing some of the most influential works in Latin literature. In addition to gaining an expertise in Latin, students also devote a portion of their study to an examination of the history and culture of ancient Rome by taking upper-division Classical Civilization courses with

Rome as their focus and/or additional Latin courses. Courses from other departments in the School of Humanities with a focus on later historical periods heavily influenced by Roman culture (such as the medieval period) may be used to satisfy some of the degree requirements, with prior approval of the Department of Classics.

The major in Classical Civilization is designed for students who do not plan to concentrate on the Classical languages or pursue graduate study in the Classics, yet wish to obtain an undergraduate degree based on a sound knowledge of the Classical world. This major requires one year of study (or its equivalent) in either Greek or Latin and a minimum of 10 courses taught in English translation concerning such topics as Classical literature, civilization, history, archaeology, art, drama, and philosophy.

Students entering UCI with previous Greek or Latin training can be given advanced standing. Usually, one year of high school work is equated with one quarter of UCI work. Thus, students with one, two, three, or four years of high school Latin (or Greek) will enroll in Latin (or Greek) 1B, 1C, and 100A or 100B, respectively. Placement may vary, depending on the extent of the student's preparation. Students with transfer credit for Greek and/or Latin may *not* repeat those courses for credit. Students with high school training in the Classical languages are encouraged to consult with the Classics faculty before enrolling in Classics courses.

The Department adheres to the policy of giving its students an opportunity to participate in the departmental decision-making process. Student representatives, elected from and by the undergraduate majors, participate in all open departmental meetings. Representatives are responsible for maintaining close liaison with their constituency, for representing the students' interest in curriculum and personnel matters, and for the evaluation of both the academic program and the academic staff.

Inquiries regarding language placement, prerequisites, planning a program of study, or other matters related to the Department's offerings should be directed to the Office of the Chair, Humanities Office Building II, telephone (949) 824-6735.

REQUIREMENTS FOR THE B.A. DEGREE

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Language Other Than English Placement and Progression: See page 253.

Departmental Requirements for the Majors

Three separate majors: Classics (with an emphasis in Greek or Latin), Latin, and Classical Civilization.

Classics *(Greek emphasis)*

A. Classics 36A, B, C.

B. Six upper-division courses in Greek 100–104, 120.

C. Greek 110.

D. Three upper-division courses in Latin 100–104.

E. Senior Capstone Requirement: Classics 192A-B (or equivalent) taken during the senior year. Under the guidance of a faculty mentor, students design and execute a senior project. Students may plan a project centering on an area of strong interest and may write a research paper, design a creative project, a primary or secondary school curriculum, or other similar projects. All project proposals must be approved by the end of Classics 192A. Six units of Classics 198, Classics 199, Greek 198, or Greek 199 may be substituted for Classics 192A-B with prior approval of the departmental undergraduate advisor.

Classics *(Latin emphasis)*

A. Classics 37A, B, C.

B. Six upper-division courses in Latin 100–104.

C. Latin 110.

D. Three upper-division courses in Greek 100–104.

E. Senior Capstone Requirement: Classics 192A-B (or equivalent) taken during the senior year. Under the guidance of a faculty mentor, students design and execute a senior project. Students may plan a project centering on an area of strong interest and may write a research paper, design a creative project, a primary or secondary school curriculum, or other similar projects. All project proposals must be approved by the end of Classics 192A. Six units of Classics 198, Classics 199, Latin 198, or Latin 199 may be substituted for Classics 192A-B with prior approval of the departmental undergraduate advisor.

Latin

A. Classics 37A, B, C.

B. Six upper-division courses in Latin 100–104.

C. Latin 110.

D. Three upper-division courses selected from Latin 103–104, Classics 140, 150, 160, 170, 175, or 176 (courses taken in another UCI department may be substituted with prior departmental approval); two of these three courses must be Roman in topic (the third course may have a Greek topic).

E. Senior Capstone Requirement: Classics 192A-B (or equivalent) taken during the senior year. Under the guidance of a faculty mentor, students design and execute a senior project. Students may plan a project centering on an area of strong interest and may write a research paper, design a creative project, a primary or secondary school curriculum, or other similar projects. All project proposals must be approved by the end of Classics 192A. Six units of Classics 198, Classics 199, Latin 198, or Latin 199 may be substituted for Classics 192A-B with prior approval of the departmental undergraduate advisor.

Classical Civilization

A. Latin (or Greek) 1A-B-C, or equivalent; Classics 36A, B, C *or* 37A, B, C *or* 45A, B, C.

B. Five upper-division Classics courses.

C. Two additional upper-division courses in related fields such as Classical history, Classical philosophy, or Classical art (these two courses may be taken in another UCI department).

D. Senior Capstone Requirement: Classics 192A-B (or equivalent) taken during the senior year. Under the guidance of a faculty mentor, students design and execute a senior project. Students may plan a project centering on an area of strong interest and may write a research paper, design a creative project, a primary or secondary school curriculum, or other similar projects. All project proposals must be approved by the end of Classics 192A. Six units of Classics 198 or Classics 199 may be substituted for Classics 192A-B with prior approval of the departmental undergraduate advisor.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minors

The Department offers minors in Greek, Latin, and Classical Civilization.

Greek: Greek 1A-B-C; six upper-division courses in Greek 100–104. Greek 120 may be substituted for one course at the 100 level.

Latin: Latin 1A-B-C; six upper-division courses in Latin 100–104.

Classical Civilization: Classics 36A, B, C *or* 37A, B, C *or* 45A, B, C; five upper-division Classics courses, one of which may be in a related field such as history, art history, or philosophy.

Residence Requirement for the Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

PLANNING A PROGRAM OF STUDY

The Department believes in close consultation with students on academic advising and program planning. Students planning to major (or minor) in Classics or Classical Civilization are strongly urged to consult with the departmental faculty at the earliest possible moment to learn about the various programs.

STUDY ABROAD

The Department of Classics encourages students to take advantage of educational opportunities abroad while making progress toward their UCI degree. Classics and Classical Civilization majors and minors can benefit from a broader perspective of the field by studying for periods ranging from one quarter to one year at any number of universities all over the world through the UC Education Abroad Program. Students can also augment their exposure to Greek, Latin, and Classical civilizations by studying for a summer or during the academic year in Greece or Italy at programs sponsored by other academic institutions through the International Opportunities Program. To determine how study abroad can fit into a Classics or Classical Civilization major, visit UCI's Center for International Education Web site, especially the "Study Abroad in Your Major" section at http://www.cie.uci.edu/academics/academicplanning.html. See the Department of Classics Undergraduate Program Director for additional information.

CAREER OPPORTUNITIES

The study of the ancient world is a valuable possession for modern life. The discipline of Classics is an important part of a well-rounded education. Greek and Latin language and literature, history and philosophy, mythology and religion make an excellent basis for exploring all periods of Western culture down to the present day. Classics is an interdisciplinary study, exploring human culture by a variety of methods from a variety of points of view. For this reason, the student who chooses to major in Classics or Classical Civilization may find many professional opportunities open.

Graduate and professional schools in medicine, law, management, and other fields welcome students with training in Classics. So do many business corporations. Business, industry, and technology are well acquainted with the value of an education in Classics. They are aware that students with a strong background in a respected and challenging major such as Classics are disciplined thinkers who can express themselves in clear, coherent, and cogent language, capabilities that are considered valuable in future physicians, lawyers, and managers.

There are also specific vocational opportunities open to the graduate in Classics or Classical Civilization. A major in this field may lead to a career in high school teaching, or (after appropriate further study) in college or university teaching. It is also an excellent preparation for advanced study in other academic disciplines such as archaeology, history, comparative literature, philosophy, and linguistics, as well as for theological studies and for work in a wide range of the humanities and social sciences.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on résumé preparation, job search, and interview techniques. See the Career Center section for additional information.

The University of California Tri-Campus Graduate Program in Classics

UC IRVINE, UC RIVERSIDE, AND UC SAN DIEGO

Michele Salzman, **Chair, Joint Executive Committee**

Faculty

Georgios Anagnostopoulos, Ph.D. Brandeis University, *Professor of Philosophy,* UCSD (Ancient Greek philosophy, ethics, metaphysics)

Luci Berkowitz, Ph.D. Ohio State University, *Professor Emerita of Classics,* UCI (Greek literary history, computer application to literature)

Charles Chamberlain, Ph.D. University of California, Berkeley, *Lecturer in Classics and Comparative Literature,* UCSD (Greek and Latin literature, Aristotle, poetics)

Cynthia L. Claxton, Ph.D. University of Washington, *Lecturer in Classics with Security of Employment, Undergraduate Program Director, and Graduate Advisor,* UCI (Greek prose, historiography)

Page duBois, Ph.D. University of California, Berkeley, *Professor of Classics and Comparative Literature,* UCSD (Greek literature, rhetoric, critical theory, cultural studies)

Anthony Edwards, Ph.D. Cornell University, *Professor of Classics and Comparative Literature,* UCSD (epic, Greek comedy, critical theory)

Richard I. Frank, Ph.D. University of California, Berkeley, *Professor Emeritus of History and Classics,* UCI (Roman history, Latin elegy and satire, classical tradition)

Zina Giannopoulou, Ph.D. University of Illinois, *Assistant Professor of Classics,* UCI (literary theory and Platonic hermeneutics, classical and Hellenistic philosophy, Greek tragedy and epic)

David Glidden, Ph.D. Princeton University, *Professor of Philosophy,* UCR (Greek and Roman philosophy)

Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History,* UCI (Byzantine and Medieval art)

Monte Johnson, Ph.D. University of Toronto, *Assistant Professor of Philosophy,* UCSD (ancient philosophy)

Dayna Kalleres, Ph.D. Brown University, *Assistant Professor of Literature and the Study of Religion,* UCSD (early to late antique Christian literature and culture)

Andromache Karanika, Ph.D. Princeton University, *Assistant Professor of Classics,* UCI (Greek epic poetry, Greek lyric, folklore)

Edward N. Lee, Ph.D. Princeton University, *Professor Emeritus of Philosophy,* UCSD (Greek philosophy, Plato)

Marianne McDonald, Ph.D. University of California, Irvine, *Professor of Theatre and Classics,* UCSD (Greek and Roman theatre, ancient drama in modern plays, film, and opera)

Margaret M. Miles, Ph.D. Princeton University, *Professor of Art History and Classics,* UCI (Greek and Roman art and archaeology, ancient Sicily, Greek religion)

Alden A. Mosshammer, Ph.D. Brown University, *Professor Emeritus of History,* UCSD (early Christian thought, Greek chronography, early Greek history)

Sheldon Nodelman, Ph.D. Yale University, *Associate Professor of Visual Arts,* UCSD (Classical art and architecture, Roman portraiture, critical theory)

Maria C. Pantelia, Ph.D. Ohio State University, *Professor of Classics and Director, Thesaurus Linguae Graecae®,* UCI (Greek epic, Hellenistic poetry, digital technologies in the humanities)

James I. Porter, Ph.D. University of California, Berkeley, *Professor of Classics and Comparative Literature,* UCI (philosophy, literary and cultural criticism and aesthetics, history of the classical disciplines, reception of Homer)

Wendy Raschke, Ph.D. State University of New York, Buffalo, *Lecturer in Classics,* UCR (Roman satire, Greek art and archaeology)

Michele Salzman, Ph.D. Bryn Mawr College, *Chair, Joint Executive Committee, UC Tri-Campus Graduate Program in Classics and Professor of History,* UCR (Late antiquity; Roman history and literature, religion, women's studies)

Gerasimos Santas, Ph.D. Cornell University, *Professor Emeritus of Philosophy,* UCI (ancient philosophy, history of philosophy, ethics)

Thomas F. Scanlon, Ph.D. Ohio State University, *Professor of Classics,* UCR (Greek and Roman historiography, ancient athletics)

Gary Shiffman, Ph.D. University of Michigan, *Assistant Professor of Political Science,* UCSD (Greek political theory)
Patrick Sinclair, Ph.D. Northwestern University, *Professor Emeritus of Classics,* UCI (Roman historiography, rhetoric)
Dana F. Sutton, Ph.D. University of Wisconsin, *Professor Emeritus of Classics,* UCI (Greek and Latin drama, Greek poetry, Anglo-Latin literature)
Nicholas White, Ph.D. Harvard University, *Professor Emeritus of Philosophy and Classics,* UCI (ancient philosophy, ethics, epistemology/metaphysics)
Andrew Zissos, Ph.D. Princeton University, *Department Chair and Associate Professor of Classics,* UCI (Latin epic, medieval Latin, Roman culture)

The UC Tri-Campus Graduate Program in Classics is a joint venture that combines faculty in Classics and related disciplines from the three southernmost University of California campuses—UC Irvine, UC Riverside, and UC San Diego.

Students accepted into the program may enroll at any of the three campuses, but normally apply for admission through UCI, which is the main location for instruction and administration. Applications are reviewed by an admissions committee composed of faculty members from all three campuses.

The goal of the program is to provide a graduate education that unites the main currents of modern literary, cultural, and social-scientific theory with the traditional skills and methodologies of classical philology. Candidates for degrees are expected to exhibit facility in Greek and Latin, competence in research, including theoretical approaches to texts and objects, technical mastery of computing for research and teaching, and experience in teaching. These goals are realized through the four core courses (Classics 200A, B, C and 201) and seminars (Classics 220).

All entering students are admitted into the Ph.D. program. With the exception of those granted advanced standing because they hold the M.A. degree in Classics from another institution, entering students may be awarded an M.A. along the way.

Master of Arts in Classics

The requirements for the M.A. degree are two years (six quarters) of course work, followed by a comprehensive examination or completion of a Master's thesis. A reading knowledge of either German, French, Italian, or an equivalent language, demonstrated by examination or appropriate course work, is also required. M.A. students must successfully complete a minimum of 12 approved, seminar-level courses. The normal course load is three 200-level courses each quarter distributed as follows: nine quarters of Classics 220; three quarters of Classics 200A, B, C, and 201; a fourth quarter may be substituted for a Classics 220. Up to one quarter of Classics 290 for research and writing of the Master's thesis may be substituted for a Classics 220. If remedial work is required in Greek or Latin, with the Graduate Advisor's approval, one enhanced upper-division Greek or Latin course (enrolled as a Classics 280) may be substituted for a Classics 220. With the Graduate Advisor's approval, M.A. students may substitute one external graduate seminar in a relevant area outside of Classics (at any of the three participating campuses) for a Classics 220. At the end of a student's M.A. studies, a positive vote of the program faculty is necessary for continuation in the Ph.D. program. The expected time for completion of the M.A. degree is two years.

Doctor of Philosophy in Classics

The requirements for the Ph.D. degree are three years (nine quarters) of course work. Minimum course requirements are four quarters of Classics 200A, B, C, and 201; 12 quarters of Classics 220; two external graduate seminars, from departments or programs outside of Classics. These may be taken from the offerings of any of the three campuses. Students may take up to two quarters of enhanced upper-division Greek or Latin courses (enrolled as 280s) in place of Classics 220s with permission of the Graduate Advisor if remedial work is required in Greek or Latin. Where appropriate, in the third year of course work, a second Classics 200A, B, or C, may be substituted for a 220. Classics 280, Independent Study (supervised research), may be substituted for Classics 220s *only* with the permission of the Graduate Advisor. Up to 12 equivalent graduate-level courses completed elsewhere may be substituted for Tri-Campus Program courses with approval of the Joint Executive Committee. Classics 280 may be used, normally in the fourth year, to provide time to work on the Greek and Latin reading lists and to prepare for Qualifying Examinations, but these courses do not count toward the required 18 courses. Students are encouraged to take courses and seminars in relevant areas outside the program at any of the three campuses. At this stage, and during the fourth year of study, students are expected to have read extensively in the primary texts, in literary history and theory, and in ancient history. In addition, experience in supervised teaching and/or research activity is normally required. In order to qualify as a candidate for the Ph.D. and enter the dissertation stage, a student must pass a set of five written qualifying examinations, including Greek translation and Latin translation; Greek history and Roman history, history of Greek and Roman literature. Once these examinations have been passed, a student must submit a substantial dissertation prospectus, comparable to a research paper in scope and detail, and pass an oral examination administered by the candidacy committee. Ph.D. students must also demonstrate reading proficiency in one modern research language (normally German and French or Italian) by the end of their second year either through appropriate course work or by examination. Proficiency in a second modern research language is expected by the end of the third year. The normative time for advancement to candidacy is four years. The normative time for completion of the Ph.D. is six years, and the maximum time permitted is eight years.

The facilities, course offerings, programs, and individual faculty mentorship of all three campuses are available to students in the UC Tri-Campus Graduate Program in Classics. In addition, program resources are enhanced through a cooperative teaching arrangement among the Tri-Campus Program and the Classics graduate program at UC Los Angeles and at the University of Southern California.

Thesaurus Linguae Graecae®

The Thesaurus Linguae Graecae® (TLG®) is a research center at UCI. TLG® has created a digital library of Greek literature, a unique resource for research in Greek literary and linguistic studies. Although administratively separate, TLG® is closely affiliated with the Department of Classics. Information is available in the Office of Research section of this *Catalogue.*

Undergraduate Courses

Several of the Department of Classics' upper-division undergraduate courses are offered as variable-topics courses, that is, the topics addressed change from quarter to quarter. Contact the Department office for a list of recently offered topics.

Courses in Greek

(Schedule of Classes **designation: Greek)**

1A-B-C Fundamentals of Greek (5-5-5) F, W, S. 1A-B: Elements of Classical Greek grammar, syntax, and vocabulary. **1C:** Introduction to reading texts. Greek 1A-B-C and Greek S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Fundamentals of Greek (7.5-7.5) Summer. First-year Greek in an intensified form. Same as Greek 1A-B-C during academic year. Will be offered if enrollment warrants; those interested should contact the Department. Prerequisite for S1AB: none; for S1BC: S1AB or 1B, or two years of high school Greek. Greek S1AB-BC and Greek 1A-B-C may not both be taken for credit. (S1BC: **VI**)

97 Fundamentals of Greek (with Emphasis on Reading) (4). Designed primarily for students interested in acquiring a solid reading knowledge of Greek, and to facilitate the understanding and translating of Greek texts dealing with a variety of disciplines. Not open to Classics majors or minors or Greek minors. Does not serve as a prerequisite for any higher-level Greek courses or fulfill any undergraduate foreign language requirement.

99 Special Studies in Greek (1 to 4) F, W, S. Consultation with instructor necessary prior to registration. May be repeated for credit as topics vary.

100A Readings in Greek Prose (4) F. Selected readings of Greek prose authors with particular emphasis paid to the fundamentals of Greek prose style, together with grammar review. Possible authors include Xenophon, Herodotus, and Plato. Prerequisite: Greek 1C or equivalent, or consent of the Department. **(VIII)**

100B Readings in Greek Poetry (4) F. Selected readings from Greek poetry with particular emphasis paid to the peculiarities and difficulties of reading Greek poetry, together with an introduction to metrics. Possible authors include Homer and Euripides. Prerequisite: Greek 1C or equivalent, or consent of the Department. **(VIII)**

103 Seminar in Greek Prose (4) W, S. Specialized and focused study of a particular Greek prose author or topic. Prerequisite: Greek 100A or equivalent, or consent of the Department. May be repeated for credit as topics vary. **(VIII)**

104 Seminar in Greek Poetry (4) W, S. Specialized and focused study of a particular topic or author of Greek poetry. Prerequisite: Greek 100B or equivalent, or consent of the Department. May be repeated for credit as topics vary. **(VIII)**

110 Greek Prose Composition (4). Studies in Greek grammar and syntax through composition of sentences and passages in Greek prose. Prerequisite: Greek 100A or equivalent, or consent of the Department.

120 Reading of Selected Portions of the New Testament (4). Portions read may change each time course is offered. May be repeated for credit provided content varies. Prerequisite: Greek 1C or equivalent.

198 Directed Group Study (1 to 4) F, W, S. Special topics in Greek culture and civilization through directed reading and research. Consultation with instructor necessary prior to registration.

199 Independent Studies in Greek (1 to 4) F, W, S. Consultation with instructor necessary prior to registration. May be repeated for credit as topics vary.

Courses in Latin

***(Schedule of Classes* designation: Latin)**

1A-B-C Fundamentals of Latin (5-5-5) F, W, S. 1A-B: Elements of Latin grammar, syntax, and vocabulary. **1C:** Introduction to reading texts, including study of the poetry of Catullus and selected readings. Latin 1A-B-C and Latin S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Fundamentals of Latin (7.5-7.5) Summer. First-year Latin in an intensified form. Same as Latin 1A-B-C during academic year. Will be offered if enrollment warrants; those interested should contact the Department. Prerequisite for S1AB: none; for S1BC: S1AB or 1B, or two years of high school Latin. Latin S1AB-BC and Latin 1A-B-C may not both be taken for credit. (S1BC: **VI**)

97 Fundamentals of Latin (with Emphasis on Reading) (4). Designed primarily for students interested in acquiring a solid reading knowledge of Latin, and to facilitate the understanding and translating of Latin texts dealing with a variety of disciplines. Not open to Classics majors or minors or Latin minors. Does not serve as a prerequisite for any higher-level Latin courses or fulfill any undergraduate foreign language requirement.

99 Special Studies in Latin (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment. May be repeated for credit as topics vary.

100A Readings in Latin Prose (4) F. Selected readings of Latin prose authors with particular emphasis paid to the fundamentals of Latin prose style, together with grammar review. Possible authors include Cicero, Caesar, and others. Prerequisite: Latin 1C or equivalent, or consent of the Department. **(VIII)**

100B Readings in Latin Poetry (4) F. Selected readings from Latin poetry with particular emphasis paid to the peculiarities and difficulties of reading Latin poetry, together with an introduction to metrics. Possible authors include Vergil and Ovid. Prerequisite: Latin 1C or equivalent, or consent of the Department. **(VIII)**

103 Seminar in Latin Prose (4) W, S. Specialized and focused study of a particular Latin prose author or topic. Prerequisite: Latin 100A or equivalent, or consent of the Department. May be repeated for credit as topics vary. **(VIII)**

104 Seminar in Latin Poetry (4) F, W, S. Specialized and focused study of a particular topic or author in Latin poetry. Prerequisite: Latin 100B or equivalent, or consent of the Department. May be repeated for credit as topics vary. **(VIII)**

110 Latin Prose Composition (4). Studies in Latin grammar and syntax through composition of sentences and passages in Latin prose. Prerequisite: Latin 100A or equivalent, or consent of the Department.

198 Directed Group Study (1 to 4) F, W, S. Special topics in Roman culture and civilization through directed reading and research. Consultation with instructor necessary prior to enrollment.

199 Independent Studies in Latin (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment. May be repeated for credit as topics vary.

Courses in Classics

***(Schedule of Classes* designation: Classic)**

LOWER-DIVISION

5 Building English Vocabulary through Greek and Latin Roots (4). Formation and use of English words from Greek and Latin derivatives. Particularly useful for first-year students who wish to augment their vocabulary systematically.

10 Scientific and Specialized Terminology (4). A study of English terms derived from Greek and Latin and important to contemporary medicine, science, and other professions, with emphasis on development of word-building skills. No prior knowledge of Greek or Latin required. For undergraduates, particularly those in the sciences, interested in development of their technical vocabulary.

36A, B, C The Formation of Ancient Greek Society (4, 4, 4). An overview of ancient Greek civilization and its interactions with other cultures of the Mediterranean world. Focuses on major institutions and cultural phenomena as seen through the study of ancient Greek literature, history, archaeology, and religion. Same as History 36A, B, C.

36A Early Greece (IV)

36B Late Archaic and Classical Greece (IV)

36C Fourth-Century and Hellenistic Greece (IV)

37A, B, C The Formation of Ancient Roman Society (4, 4, 4). A survey of the principal aspects of Roman civilization from its beginnings to the so-called Fall of the Roman Empire in C.E. 476. Focuses on political history and ideology, social history, literature, art and architecture, and religion. Same as History 37A, B, C.

37A Origins to Roman Republic (IV)

37B Roman Empire (IV)

37C The Roman Legacy (IV)

45A, B, C Classical Mythology (4, 4, 4) F, W, S, Summer. An overview of the main myths of the ancient Greeks and Romans and their influence in literature and art throughout time. Includes readings from ancient and modern sources and utilizes modern technology.

45A The Gods (IV)

45B The Heroes (IV)

45C Ancient and Modern Perspectives of Classical Mythology (IV)

75 Introduction to Classical Rhetoric (4). Introduction to the principles of rhetoric among the ancient Greeks and Romans and to the critical analysis of arguments. Students are introduced to the history, law, and politics that provided the context in which ancient rhetoric operated.

99 Special Studies in Classics (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment.

UPPER-DIVISION

111 The Thesaurus Linguae Graecae (4). Exposes undergraduate students to the history, objectives, and activities of UCI's Thesaurus Linguae Graecae and provides them with basic understanding of the principles and procedures inherent in computer application to literary texts. Prerequisite: one year of ancient Greek, or consent of instructor.

140 Classics and History: The Ancient World (4). Selected topics in society and culture of the Graeco-Roman world. May be repeated for credit provided topic varies. Readings in translation.

150 Classical Mythology (4). Selected myths and legends as used in Classical literature, and their modern interpretations.

151 The Olympians (4). Examination of the origins and development of the Greek Olympian divinities with emphasis upon those who became central figures in pre-Christian religious cults.

160 Topics in Classical Literature in English Translation (4). Subject matter variable. May be repeated for credit provided topic varies.

170 Topics in Classical Civilization (4). Subject matter variable. May be repeated for credit provided topic varies.

175 Multicultural Studies and the Classics (4). Treats the literature and culture of one or more minority groups in California and the United States in relation to Classical literatures. May be repeated for credit as topics vary. **(VII)**

176 International Studies and the Classics (4). Develops a broader understanding of the formation of different cultures and countries of Classical times and their impact on the modern world. May be repeated for credit as topics vary. **(VIII)**

192A-B Senior Capstone (2-4) F, W, S. Under the guidance of a faculty mentor, majors design and execute a senior project. This project may be a research paper, dramatic production, school curriculum, etc. All projects must be approved by the faculty mentor. Prerequisite: satisfactory completion of the lower-division writing requirement. **192A:** In-progress grading.

198 Directed Group Study (4-4-4) F, W, S. Special topics in Classical studies through directed reading and research. Consultation with instructor necessary prior to registration.

199 Independent Studies in Classics (1 to 4) F, W, S. Consultation with instructor necessary prior to registration.

TRI-CAMPUS GRADUATE COURSES IN CLASSICS

The topics offered in these courses vary from quarter to quarter. Contact the Department of Classics office for a list of recently offered topics.

200A Contemporary Literary Theory and the Classics (4). An introduction to contemporary literary theory focusing on important critical approaches; topics vary from year to year. May be repeated for credit as topics vary.

200B Diachronic Perspectives on Classical Antiquity (4). Examines ways in which Classical texts and ideas have been received and appropriated for the diverse purposes of ancient and subsequent cultures. May be repeated for credit as topics vary.

200C Greece and Rome in Their Contemporary Cultural Contexts (4). An introduction to the methods and perspectives of social scientific theory which can be used to study the material and social dimensions of the ancient cultures of Greece and Rome. May be repeated for credit as topics vary.

201 Research and Pedagogical Tools for Classicists (4). Covers various technical skills essential for successful research and pedagogy in Classics, including use of digital resources (e.g., bibliographical databases). Introduction to important disciplinary subfields, such as textual criticism and epigraphy. Selection of topics will be at instructor's discretion.

220 Classics Graduate Seminar (4). Subject matter variable; mainly but not exclusively major literary topics. May be repeated for credit as topics vary. Same as Art History 295 when topic is appropriate.

280 Independent Study (4). Supervised independent research. Subject varies.

290 Research in Classics (4-4-4) F, W, S

299 Dissertation Research (4 to 12) F, W, S. May be repeated for credit. Satisfactory/Unsatisfactory only.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. May be repeated for credit.

DEPARTMENT OF COMPARATIVE LITERATURE

243 Humanities Instructional Building; (949) 824-6406
E-mail: complit@uci.edu
Ackbar Abbas, **Department Chair**

Faculty

Ackbar Abbas, M. Phil. University of Hong Kong, *Department Chair and Professor of Comparative Literature and Professor of Film and Media Studies* (Hong Kong culture and postcolonialism, visual culture, architecture and cinema, cultural theory, globalization)

Dina Al-Kassim, Ph.D. University of California, Berkeley, *Associate Professor of Comparative Literature* (British, American, French, Arabic, Anglophone and Francophone modernism; postcolonial critique)

Eyal Amiran, Ph.D. University of Virginia, *Associate Professor of Comparative Literature and of Film and Media Studies* (digital media theory, twentieth-century literature, narrative and textual theory, psychoanalysis, modern and postmodern intellectual history)

Etienne Balibar, Docteur en philosophie, Katholieke Universiteit Nijmegen, *Professor of French* (critical theory, political philosophy)

Ellen S. Burt, Ph.D. Yale University, *Department Chair of French and Italian and Professor of French and Comparative Literature* (nineteenth-century French literature; critical theory)

James Fujii, Ph.D. University of Chicago, *Associate Professor of Japanese and Comparative Literature* (literature and theory of East Asia)

Alexander Gelley, Ph.D. Yale University, *Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel, critical theory)

David Theo Goldberg, Ph.D. City University of New York Graduate School and Center, *Director of the UC Humanities Research Institute and Professor of Comparative Literature and of Criminology, Law and Society* (race, racism, race and the law, political theory, South Africa)

Susan Jarratt, Ph.D. University of Texas at Austin, *Professor of Comparative Literature and Education* (histories and theories of rhetoric, composition pedagogy and teacher preparation, feminist theory and pedagogy)

Adriana M. Johnson, Ph.D. Duke University, *Associate Professor of Comparative Literature* (Latin American literature, nineteenth- and twentieth-century Latin America, cultural and postcolonial studies)

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Department Chair of Women's Studies and Associate Professor of Women's Studies, Comparative Literature, and English* (feminist epistemologies and theories, cultural studies, ethnic studies)

Ketu H. Katrak, Ph.D. Bryn Mawr College, *Professor of Humanities, Comparative Literature, and English* (Asian American literature, postcolonial literature)

Catherine Liu, Ph.D. City University of New York Graduate School and Center, *Director of the Humanities Center and Associate Professor of Film and Media Studies, Comparative Literature, and English* (critical theory, visual and literary culture, psychoanalysis, narrative theory and melodrama in film and literature, New Waves, cultural revolutions)

Julia Reinhard Lupton, Ph.D. Yale University, *UCI Chancellor's Fellow, Director of the Humanities Core Course, and Professor of English, Comparative Literature, and Education* (Renaissance literature, literature and psychology)

Steven Mailloux, Ph.D. University of Southern California, *UCI Chancellor's Professor of Rhetoric and English* (rhetoric, critical theory, American literature, law and literature)

Achille Mbembe, Ph.D. Universite de Paris I–Pantheon Sorbonne, *Professor of Comparative Literature* (postcolonialism, African society and culture, race and identity)

J. Hillis Miller, Ph.D. Harvard University, *UCI Distinguished Research Professor of Comparative Literature and English* (Victorian literature, critical theory)

Jane O. Newman, Ph.D. Princeton University, *Director of European Studies and Professor of Comparative Literature and English* (sixteenth- and seventeenth-century German literature, contemporary theory and criticism, feminism)

Ngugi wa Thiong'o, *UCI Distinguished Professor of Comparative Literature and English* (African and Caribbean literatures, theater and film, performance studies, cultural and political theory)
Margot Norris, Ph.D. State University of New York, Buffalo, *UCI Chancellor's Professor of English and Comparative Literature* (modern Irish, British, American and continental modernism; literature and war)
Laura O'Connor, Ph.D. Columbia University, *Associate Professor of English and Comparative Literature* (Irish literature, twentieth-century poetry, Anglo-American modernism)
James I. Porter, Ph.D. University of California, Berkeley, *Professor of Classics and Comparative Literature* (Greek, Latin, comparative literature)
R. Radhakrishnan, Ph.D. State University of New York, Binghamton, *Professor of English and Comparative Literature* (critical theory, poststructuralism, postcoloniality, globalization, nationalisms, diasporas)
Nasrin Rahimieh, Ph.D. University of Alberta, *Director of the Dr. Samuel M. Jordan Center for Persian Studies and Culture, Professor of Comparative Literature, and Maseeh Chair in Persian Studies and Culture* (Persian literature and culture, diaspora studies, film and media, religious studies)
John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Professor Emeritus of Comparative Literature* (American literature, modern literature, critical theory)
Annette Schlichter, Ph.D. Humboldt University of Berlin, *Associate Professor of Comparative Literature* (feminist theory and criticism, queer theory, contemporary American literature, gender and literature)
Gabriele Schwab, Ph.D. University of Konstanz, *UCI Chancellor's Professor of Comparative Literature and English* (modern literature, critical theory, psychoanalysis)
Martin Schwab, Ph.D. University of Bielefeld, *Director of the Minor in Humanities and Law and Professor of Philosophy and Comparative Literature* (philosophy and aesthetics)
John H. Smith, Ph.D. Princeton University, *Department Chair and Professor of German, and Professor of Comparative Literature* (nineteenth-century German philosophy and literature)
James Steintrager, Ph.D. Columbia University, *Interim Department Chair of English and Associate Professor of English and Comparative Literature* (comparative literature, eighteenth-century French, German, and English literature and aesthetics)
Rei Terada, Ph.D. Boston University, *Professor of Comparative Literature* (theory, poststructuralism, nineteenth- and twentieth-century poetry)
Jennifer Terry, Ph.D. University of California, Santa Cruz, *Associate Professor of Women's Studies and Comparative Literature* (gender and queer studies, film studies)

Undergraduate Program

Comparative Literature reaches beyond any single national culture to consider relations between various literatures and cultures, methods of study, periods, and media. The Comparative Literature program at UCI trains students to examine literatures, cultures, and media in an international frame by focusing on contextualization and historicization. Another key component of the program is the study of critical theory, which provides the tools to read in a philosophically and theoretically informed manner. Students are exposed to a wide range of topics such as the impact of colonialism on African novels, the relationships between Asian film and literature, literatures and cultures of the Middle East, global women's writing, comparative queer theories, gender and madness, time travel, phenomenology and deconstruction, and images of cannibalism in France and Latin America. All Comparative Literature courses are taught in English. Texts are read in English and English translation but students are enabled to encounter literatures in original languages through the Department's foreign language requirement.

The Department of Comparative Literature offers a major and a minor. Comparative Literature is well suited for students interested in international issues, critical theory, the history of inter- and cross-cultural contact, and the ways in which literatures and cultures dialogue with one another across time and space. Most Comparative Literature classes are small and intimate and emphasize student discussion. The Department also sponsors meetings and activities for majors so that students can get to know one another.

CAREERS FOR THE COMPARATIVE LITERATURE MAJOR

The study of Comparative Literature trains students to do independent research, learn languages, and think and write analytically, always in an international context. This helps qualify majors for careers in education, international relations, law, government, communications and media, or journalism. It is also excellent preparation for an academic career. Graduates from the Department of Comparative Literature at UCI currently teach English, world literature, and modern foreign languages at the high school level. Many have also gone on to complete a Ph.D. in Comparative Literature, which prepares students to teach in departments of English, Classics, modern foreign languages, Near Eastern studies, East Asian studies, and comparative literature, as well as in interdisciplinary programs at various colleges and universities.

REQUIREMENTS FOR THE B.A. DEGREE IN COMPARATIVE LITERATURE

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the Major

A. Comparative Literature 60A, 60B, 60C.

B. Five upper-division courses in Comparative Literature.

C. Two additional upper-division Comparative Literature courses or other upper-division courses offered in the School of Humanities.

D. Comparative Literature 190 (capstone seminar; taken in satisfaction of upper-division writing).

E. Competence in a foreign language sufficient for reading and understanding literature and culture in that language may be demonstrated through course work in one of following ways:

1. Two upper-division courses in a foreign literature or culture in which texts are read in the original.
2. One upper-division course in a foreign literature or culture in which texts are read in the original, plus one upper-division course in a literature or culture in translation.
3. Students who study Chinese, Japanese, Korean, or Vietnamese may fulfill the entire requirement by successfully completing these languages through 3C plus one approved upper-division course in the literature or culture of that language either in the original language or in translation. (Students of these languages may also complete option 1 or 2.)
4. Students who study Greek and Latin fulfill the entire requirement by successfully completing two years of college-level language training.

   An Independent Study course may substitute for any part (i.e., either a language or literature course) of the foreign language requirement upon petition to the undergraduate studies director in Comparative Literature.

Credits from the UC Education Abroad Program may be substituted for the Departmental language and upper-division requirements.

Requirements for the Optional Specialization in Cultural Studies

Students complete requirements A, C, D, and E above.

For requirement B, students take Comparative Literature 140 plus four courses from the following list: Comparative Literature 105, 130, 132, 141, 142, 143, 144.

Residence Requirement for the Comparative Literature Major: Comparative Literature 190 and four additional upper-division courses in Comparative Literature or other courses offered in the

School of Humanities must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved by the appropriate program advisor or chair.

Departmental Requirements for the Comparative Literature Minor

A. Comparative Literature 60A, 60B, 60C.

B. Three upper-division courses in Comparative Literature.

C. One additional upper-division course in Comparative Literature or another upper-division course offered in the School of Humanities.

Residence Requirement for the Comparative Literature Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved by the appropriate program advisor or chair.

PLANNING A PROGRAM OF STUDY

The Department offers close consultation for academic planning. All students should plan courses of study with faculty advisors. Students who wish to pursue double majors, special programs, or study abroad are urged to seek advising as early as possible.

Graduate Program

Comparative Literature faculty are particularly equipped to guide students in critical theory, postcolonial studies, and comparative American studies. Comparative Literature is engaged with disciplines such as psychoanalysis, rhetoric, political theory, narrative theory, and gender studies, and many small seminars in these fields are offered. The M.A. degree is considered to be a step toward the Ph.D.; only students intending to complete the doctorate are admitted to the program. Applicants must hold a B.A. or equivalent degree and should normally have majored in Comparative Literature, English, or a foreign literature. Majors in other disciplines (e.g., philosophy, history, visual studies, women's studies, ethnic studies) will be considered, provided that a sufficient background in literary and cultural studies and in at least one foreign language is demonstrated.

The Department offers a track in (1) Comparative Literature with an emphasis in a literary tradition, (2) Comparative Literature with an emphasis in Translation Studies, and (3) Comparative Literature with an emphasis in Critical Theory. (See the departmental graduate student handbook for a description of these emphases.) Graduate students in Comparative Literature may also complete an emphasis in Chinese Language and Literature, Classics, East Asian Cultural Studies, French, German, Japanese Language and Literature, or Spanish. Emphases in Asian American Studies, Critical Theory, Feminist Studies, and Visual Studies are available through the School of Humanities. Within these emphases, students enroll in sequences of courses that highlight individual interests and expertise. In consultation with advisors, students may also develop individualized curricula that cut across these and other offerings in the Department and School.

A minor field specialization is recommended. This optional component promotes engagement with a field or methodology outside the student's specialization. It may be of a national, historical, disciplinary, or methodological nature, with the student of western postmodern literary theory and forms engaging in a focused study of ancient Greek or Roman philosophy and culture, for example, or the student of East Asian languages and diasporic literatures may work in anthropology or ethnography. This optional component of the student's program may be fulfilled through course work, independent studies, or a Qualifying Examination topic.

Graduate students in Comparative Literature must demonstrate a command of two foreign languages consistent with their particular focus of study within the program. Competence in two foreign languages is required for the Ph.D. and is verified through examination, a longer translation project, and/or course work.

The Department recognizes that most of its graduate students intend to become teachers, and believes that graduate departments should be training college teachers as well as scholars—indeed, that teaching and scholarship complement one another. Thus candidates for the Ph.D. are expected to acquire experience in teaching, and all Ph.D. candidates gain supervised training as part of the seminar work required for the degree.

Several substantial fellowships are available to graduate students.

The Schaeffer Fellowship provides $20,000 plus fees for up to two years to Ph.D. students in Comparative Literature for whom translation will be a crucial element of their dissertation work. Scholars translating literary or historical texts or archival materials not previously reliably available in English as part of their dissertation research are eligible. Multiple fellowships per year may be awarded. Students interested in the Schaeffer Fellowship should contact the Department prior to applying to the Ph.D. program.

The Murray Krieger Fellowship in Literary Theory is intended for an outstanding entering graduate student pursuing the Ph.D. in Comparative Literature or English who demonstrates a primary interest in theory as theory relates to literary texts.

A range of other fellowships is also available to students in the Department.

Master of Arts in Comparative Literature

Entering students are assigned a faculty advisor who usually serves as the chair of the student's M.A. examination committee (which consists of at least two other members of the faculty). Nine courses and an examination are required to complete the degree. The normal academic load for both M.A. and Ph.D. candidates is three courses a quarter; teaching assistants take two courses in addition to earning credit for University teaching. Only in exceptional circumstances will students be permitted to undertake programs of less than six full courses during the academic year.

The M.A. examination is normally taken during the quarter in which the student completes course work. For the examination, the candidate submits an M.A. paper and a statement of purpose outlining past and future course work and preliminary plans for the Ph.D. qualifying examination. The M.A. examination consists of a discussion of the student's paper and the statement of purpose. In practice, it resembles an extended advising session, but with particularly close attention to the student's paper.

Doctor of Philosophy in Comparative Literature

The doctoral program in Comparative Literature prepares the student for a professional career in the research and teaching of comparative literary and cultural studies. Some students also choose to enter professions (e.g., specialized research, nonprofit organizations, international cultural exchange) in which the specialized work in a specific field indicated by an advanced degree is highly desirable.

Normally, students who have not done graduate work at another university must complete at least 16 courses. Upon completion of the course work, the student takes a qualifying examination on four areas formulated by the student in consultation with the four faculty members who make up the examination committee. The four areas are to cover a major field, a secondary field, a special topic, and theory. All four areas are to be related to each other and to work toward the dissertation. The examination is part written, part

oral, according to a formula decided by the student and the committee. The examination as a whole should reflect the student's ability to work in at least two languages.

After passing the qualifying examination, the student forms a dissertation committee of three faculty members, formulates a dissertation topic in consultation with them, and submits a prospectus for the dissertation along with a preliminary bibliography. Study toward the Ph.D. culminates in the dissertation. The normative time for advancement to candidacy is four years. The normative time for completion of the Ph.D. is seven years, and the maximum time permitted is nine years.

Courses in Comparative Literature

***(Schedule of Classes* designation: Com Lit)**

LOWER-DIVISION

Satisfaction of the UC Entry Level Writing requirement is a prerequisite for all departmental courses except Comparative Literature 8. Descriptions of the undergraduate courses available during a given year may be obtained in the Department office in the fall.

8 Travels in Comparative Literature (4) F, W, S. Readings in English and in English translation on such topics as love, war, cities, travel writing, politics, fantasy and science fiction, violence. May be repeated for credit as topics vary. **(IV)**

9 Introduction to Multiculturalism (4) F, W, S. Various themes and forms of literary and cultural production within a multicultural framework, including African American, Asian American, Chicano/Latino, and Native American literatures and cultures. May be repeated for credit as topics vary. **(IV, VII)**

10 World Literature (4) F, W, S. Introduction to texts from across the globe and from different historical periods. Readings in English and English translation. May be repeated for credit as topics vary. **(IV, VIII)**

40A, B, C Development of Drama (4, 4, 4) F, W, S. Same as Drama 40A, B, C. **(IV, VIII)**

60A Reading Across Borders (4) F, W, S. An introduction to the comparative study of literatures and cultures. Studies literary texts and other media across the borders of various cultures, historical periods, and traditions. All texts are read in English translation. Prerequisite: satisfactory completion of the lower-division writing requirement. Formerly Comparative Literature 50A. **(IV)**

60B Reading with Theory (4) F, W, S. Introduction to theory and methods of literary and cultural criticism. Students read and discuss theoretical approaches to literature and culture and ideas that are important in literary and cultural criticism. Marx and Freud, for example, may be studied alongside readings in narrative poetry, film, song lyrics, novel. Prerequisite: satisfactory completion of the lower-division writing requirement. **(IV)**

60C Reading through Genre and Medium (4) F, W, S. Focuses on differences that genre and medium (e.g., written, visual, oral) make on the way texts are produced and received—for example, how autobiographies, testimonials, novels, and films construct different images of the self; surrealism in art, poetry, and comics. Prerequisite: satisfactory completion of the lower-division writing requirement. Formerly Comparative Literature 50C. **(IV)**

UPPER-DIVISION

100A Nations, Regions, and Beyond (4) F, W, S. Intensive study of national and regional cultural and literary traditions from across the globe, among them the literary and cultural production of the Middle East, Africa, Europe, the Americas, and Asia. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VIII)**

102 Comparative Studies in Literature and Theory (4). F, W, S. In-depth discussion of special topics. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

105 Comparative Multiculturalism (4) F, W, S. Treats the literatures and cultures of one or more minority groups in California and the United States, including African Americans, Asian Americans, Chicano/Latinos, and Native Americans, and their relations to other national literatures. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VII)**

107 Colonialisms and Postcolonialisms (4) F, W, S. Explores topics such as colonialism and race, decolonization, pre- and postcoloniality, globalization, and the cultural dynamics of colonization and subjectivity. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VIII)**

108 Diasporic Literatures and Cultures (4) F, W, S. Literatures, cultures, and histories of diasporic groups, e.g., literature of the Persian diaspora; cinema of the African diaspora. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VIII)**

120 Philosophy, Culture, and Literature (4) F, W, S. Discusses contemporary and historical philosophical questions and figures—for example, existentialism or debates about artificial intelligence—in interaction with culture and literature. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

121 Narrative, Pattern, and Text (4) F, W, S. Explores textual patterns, structures, and effects. May include topics such as novel, hypertext, genre, reader responses, intertextuality. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

122 Rhetorical Approaches to Literature (4) F, W, S. Studies the art and politics of rhetoric and persuasion in connection with cultural works from various times and places, for example, classical political speeches, Internet journalism. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

123 Literatures in Dialogue (4) F, W, S. Studies the way texts communicate with each other across time and space. Using the concepts of influence, canon formation, imitation, and parody, asks for example, how the Homeric epics can help us understand Caribbean novels and cinematic epics such as *Troy*. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

130 Gender, Sexuality, Race, Class (4) F, W, S. Discusses the roles of differences such as race, class, gender, and sexuality in society, culture, and literature, covering topics such as theoretical and literary representations of queer sexuality, gender performance, critical race theory. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

131 Psychoanalysis and Culture (4) F, W, S. Discusses major psychoanalytic writings of Freud and others in connection with questions of culture. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

132 Discourse, Ideologies, and Politics (4) F, W, S. Compares ideologies and systems, e.g., nationalism and fundamentalism, as they affect literature and culture. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

140 Critical Cultural Studies (4) F, W, S. Introduces a variety of ways of understanding cultural phenomena in relation to different power structures. These cultural phenomena may include comics, film, literature, sports, music, festivals, telling stories, or eating out. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

141 Popular Culture (4) F, W, S. Critical analyses of popular culture such as comics, oral narratives, films, TV, music, in an international framework. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

142 The Metropolis and Other Cultural Geographies (4) F, W, S. Examines the relationship between space and culture; cultural production in the city, suburb, and/or countryside; spaces in texts and artifacts (film, literature, comics, photographs). Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

143 Literature, Arts, and Media (4) F, W, S. Explores literature and other arts and media. May include film and electronic media, fine arts, oral cultures, architecture, in an international framework. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

144 Literature, History, and Society (4) F, W, S. Explores the relationship between literary texts and their historical and social contexts in an international framework. Individual courses may address, for example, literary and cultural expressions in social revolutions and wars or the way literary texts talk back to medicine, religion, and anthropology. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

150 Literature in Translation (4) F. The study of literary works in one or more genres in English translation. May be a comparative study of works from several different original languages or a concentration on works from a single cultural/linguistic tradition. Prerequisite: satisfactory completion of the lower-division writing requirement. May be taken for credit twice as topics vary.

160 World Cinema (4) F. Comparative analysis of contemporary film in languages other than English. May be taken for credit twice as topics vary. Same as Film and Media Studies 160. **(VIII)**

190 Advanced Seminar in Comparative Literature and Theory (4) F, W, S. Capstone seminar for the Comparative Literature major. Deepens understanding of the field through investigation of a special topic and a substantial research and writing project. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. Formerly Comparative Literature 106.

198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

199 Independent Study in Comparative Literature (1 to 4). To be taken only when the materials to be studied lie outside the normal run of departmental offerings. Prerequisites: consent of the student's advisor, the instructor, and the Department Chair. May be repeated for credit.

GRADUATE

All graduate courses may be repeated when the topic varies. Descriptions of the topics to be treated in a given academic year are published by the Department in the fall. Enrollment in each graduate course requires the consent of the instructor. The courses are limited to registered graduate students, except for specially qualified fifth-year students seeking teaching credentials, who may enroll if they have received permission from the Director of Graduate Studies and if space permits.

In addition to the following courses, graduate students in the Department of Comparative Literature might find Humanities 200 (The Nature and Theory of History) and Humanities 291 (Interdisciplinary Topics) of special interest.

200 Theories and Methods of Comparativism (4). Addresses the disciplinary, institutional, and theoretical dimensions of Comparative Literature. Course design varies with instructor.

200A History of Comparative Literature and Introduction to Methods and Theories of Comparative Literature (4) F. Seminar designed to introduce graduate students in Comparative Literature to the parameters and practices of the discipline of Comparative Literature. Major issues and theories of comparative literary and cultural study are covered. Strongly recommended for first- and second-year students before the M.A. examination and review.

200B Theories of Translation (4) F, W, S. The reproduction, translation, and transfer of literary and cultural, ideological and political, and symbolic codes and texts have long been the object of study in Comparative Literature. Addresses the diverse ways in which expressive systems interact and intersect.

200C Theories of Globalization, Inter-Nationalism, and Postcolonialism (4) F, W, S. Addresses both theories and the complex history of literary and cultural expression in a national, trans-, inter-, and post-national, global frame. Topics may include: globalism and nationhood, theories of citizenship and political subjecthood, postcolonial literature and theory.

200D Cultural Rhetoric and Rhetorical Theory (4) F, W, S. Surveys contemporary theories of cultural rhetoric and the cultural rhetoric of contemporary theory, and interrogates the intersection of rhetoric, critical theory, and cultural studies. Both historical and contemporary theories of rhetoric and cultural rhetorics are studied.

210 Comparative Studies (4) F, W, S

220 Translation Workshop (2 to 4) F, W, S. Trains students in the methodologies and practice of translation. Students focus on the translating process in a series of case studies and individual projects. May be taken for a total of 8 units.

CR 220A, B Studies in Literary Theory and Its History (4, 4) F, W. Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists. Same as Humanities 220A, B.

CR 240 Advanced Theory Seminar (4) F, W, S

290 Reading and Conference (4) F, W, S

291 Guided Reading Course (4)

299 Dissertation Research (4 to 12) F, W, S

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory only. May be repeated for credit.

GRADUATE PROGRAM IN CULTURE AND THEORY

3016 Humanities Gateway; (949) 824-0718
Arlene Keizer, **Director**

Core Faculty

Jonathan Alexander, Ph.D. Louisiana State University, *Campus Writing Director and Associate Professor of English* (writing studies, sexuality studies, queer theory, new media studies)

Dina Al-Kassim, Ph.D. University of California, Berkeley, *Associate Professor of Comparative Literature* (gender and queer theory, global modernisms in Africa, Middle East and Europe, postcolonial critique, Arabic, anglophone and francopohone literature)

Christine Bacareza Balance, Ph.D. New York University, *Assistant Professor of Asian American Studies* (performance studies, critical race and ethnic studies, Filipino American studies, queer theory, and popular culture)

Tom Boellstorff, Ph.D. Stanford University, *Professor of Anthropology* (virtual worlds, sexuality, postcoloniality, HIV/AIDS, mass media and popular culture, language and culture, Indonesia, Southeast Asia)

Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture* (modern Korea, postcolonial and colonial discourse, popular culture, anthropology)

Bridget R. Cooks, Ph.D. University of Rochester, *Assistant Professor of African American Studies and Art History* (African American art and culture, Black visual culture, museum criticism, film, feminist theory and postcolonial theory)

Sohail Daulatzai, Ph.D. University of Southern California, *Assistant Professor of Film and Media Studies* (Black racialism and internationalism, Muslim studies, critical race studies, U.S. imperial culture, and cultural history)

David Theo Goldberg, Ph.D. City University of New York Graduate School and Center, *Director of the UC Humanities Research Institute and Professor of Comparative Literature and of Criminology, Law and Society* (race, racism, race and the law, political theory, South Africa)

Sora Han, Ph.D. University of California, Santa Cruz, *Assistant Professor of Criminology, Law and Society* (law and popular culture, critical race theory, philosophies of punishment, feminism and psychoanalysis)

Douglas M. Haynes, Ph.D. University of California, Berkeley, *Director of the ADVANCE Program for Faculty Equity and Diversity and Associate Professor of History* (social and cultural history of modern Britain, social history of modern medicine)

Winston A. James, Ph.D. London School of Economics and Political Science, *Professor of History* (Caribbean, African-American, and African diaspora)

Adriana M. Johnson, Ph.D. Duke University, *Associate Professor of Comparative Literature* (Latin American literature, nineteenth- and twentieth-century Latin America, cultural and postcolonial studies)

Victoria E. Johnson, Ph.D. University of Southern California, *Department Chair and Associate Professor of Film and Media Studies* (critical/cultural history of U.S. TV and film, critical race theory, sound and music in film/TV, branding and identity)

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Department Chair of Women's Studies and Associate Professor of Women's Studies, Comparative Literature, and English* (feminist epistemologies and theories, cultural studies, ethnic studies)

Ketu H. Katrak, Ph.D. Bryn Mawr College, *Professor of Humanities, English, and Comparative Literature* (diaspora studies, postcolonial literature, South Asian American cultural expressions)
Arlene Keizer, Ph.D. University of California, Berkeley, *Director of the Culture and Theory Ph.D. Program and Associate Professor of English* (African American and Caribbean literature, critical race and ethnic studies, feminist and psychoanalytic theory, cultural studies)
Rodrigo Lazo, Ph.D. University of Maryland, *Associate Dean of Humanities Undergraduate Study and Associate Professor of English* (Latino studies, American ethnic and minority literature, Cuba and Cuban American studies)
James Kyung-Lee, Ph.D. University of California, Los Angeles, *Associate Professor of Asian American Studies and English* (Asian American literature and culture, contemporary U.S. literature, race and ethnic studies, urban studies, religious studies)
Mark A. LeVine, Ph.D. New York University, *Professor of History* (modern Middle Eastern history, Islamic studies, histories of empire and globalization)
Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (feminism, queer visuality, creative nonfiction, new genres)
Lilith Mahmud, Ph.D. Harvard University, *Assistant Professor of Women's Studies* (elites; race and nationalism; cultural capital; secrecy and conspiracy; feminist ethnography; and critical studies of Europe)
Steven Mailloux, Ph.D. University of Southern California, *UCI Chancellor's Professor of Rhetoric and English* (rhetoric, critical theory, American literature, law and literature)
Glen Mimura, Ph.D. University of California, Santa Cruz, *Associate Professor of Film and Media Studies* (minority, diasporic, and third cinemas; media, nationalism, and globalization; race, sexuality and popular culture)
Yong Soon Min, M.F.A. University of California, Berkeley, *Professor of Studio Art* (intermedia, migration, cultural studies)
Michael J. Montoya, Ph.D. Stanford University, *Assistant Professor of Anthropology and Chicano/Latino Studies* (social inequality and health; race and ethnicity; social and cultural studies of science, technology, and medicine; the participation of ethnic populations in biomedical research; the U.S./Mexican border, critical bioethics)
Kevin Olson, Ph.D. Northwestern University, *Associate Professor of Political Science* (contemporary European political theory, cultural politics, politics of diversity, popular sovereignty, citizenship, nineteenth- and twentieth-century political theory)
Rachel O'Toole, Ph.D. University of North Carolina at Chapel Hill, *Assistant Professor of History* (Colonial Latin America, African Diaspora, colonialisms, race, racism, indigenous histories, Atlantic worlds)
Kavita Philip, Ph.D. Cornell University, *Associate Professor of Women's Studies* (science and technology studies, South Asian studies, political ecology, critical studies of race, gender, colonialism, new media, and globalization)
R. Radhakrishnan, Ph.D. State University of New York, Binghamton, *Professor of English and Comparative Literature* (critical theory, postcoloniality, nationalisms and diasporas, poststructuralism, postmodernism, democracy and minority discourse, cultural studies, globalization and transnationalism)
Connie Samaras, M.F.A. Eastern Michigan University, *Professor of Studio Art* (photography, contemporary visual art, gender studies, culture and technology)
Jeanne Scheper, Ph.D. University of California, Santa Barbara, *Assistant Professor of Women's Studies* (feminist performance studies and visual culture, cultural studies, theories of race, gender and sexuality, trans-Atlantic modernism)
Gabriele Schwab, Ph.D. University of Konstanz, *UCI Chancellor's Professor of Comparative Literature* (modern literature, critical theory, psychoanalysis, comparative literature)
Jared Sexton, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and of Film and Media Studies* (race and sexuality, policing and imprisonment, contemporary U.S. cinema and political culture, multiracial coalition, critical theory)
John H. Smith, Ph.D. Princeton University, *Department Chair and Professor of German, and Professor of Comparative Literature* (eighteenth- and nineteenth-century literature and intellectual history, literary theory)
Jennifer Terry, Ph.D. University of California, Santa Cruz, *Associate Professor of Women's Studies and Comparative Literature* (cultural studies, social theory; science and technology studies, formations of gender and sexuality; critical approaches to modernity; American studies in transnational perspective)
Keith Topper, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science* (political theory, critical theory, poststructuralism, theories of power, language and politics, theory and politics of interpretation, politics of culture, philosophy of the social sciences)
Deborah R. Vargas, Ph.D. University of California, Santa Cruz, *Assistant Professor of Chicano/Latino Studies* (Chicana/Latina cultural production; cultural studies; queer studies; women of color feminisms, popular culture and music)
Roxanne Varzi, Ph.D. Columbia University, *Associate Professor of Anthropology* (Islam, visual anthropology, anthropology of war, media, youth culture, religion and public space; Iran)
Linda Trinh Võ, Ph.D. University of California, San Diego, *Associate Professor of Asian American Studies* (race and ethnic relations, immigrants and refugees, gender relations, and community and urban studies)
Tiffany Willoughby-Herard, Ph.D. University of California, Santa Barbara, *Assistant Professor of African American Studies* (South Africa, poor whites, race in foreign policy, diaspora, comparative racial politics, third world feminisms, feminist pedagogy, black political thought)
Mei Zhan, Ph.D. Stanford University, *Associate Professor of Anthropology* (medical anthropology, cultural and social studies of science, globalization, transnationalism, gender; China and United States)

Affiliated Faculty

Ackbar Abbas, *Department Chair and Professor of Comparative Literature, and Professor of Film and Media Studies*
Luis F. Avilés, *Associate Professor of Spanish*
Etienne Balibar, *Professor of French and Comparative Literature*
Victoria Bernal, *Associate Professor of Anthropology*
Sharon B. Block, *Associate Professor of History*
Vinayak Chaturvedi, *Associate Professor of History*
Susan Bibler Coutin, *Associate Dean of the Graduate Division and Professor of Criminology, Law and Society and of Anthropology*
Beatriz da Costa, *Associate Professor of Studio Art, Electrical Engineering and Computer Science, and Informatics*
Julia Elyacher, *Assistant Professor of Anthropology*
Raúl Fernández, *Director of the UC-Cuba Academic Initiative and Professor of Chicano/Latino Studies and Social Sciences*
Gilbert Gonzalez, *Professor Emeritus of Social Sciences and Chicano/Latino Studies*
James D. Herbert, *Professor of Art History*
Susan Jarratt, *Professor of Comparative Literature, Education, and Women's Studies*
Claire Jean Kim, *Associate Professor of Asian American Studies and Political Science*
Felicidad "Bliss" Cua Lim, *Acting Associate Professor of Film and Media Studies*
William M. Maurer, *Department Chair and Professor of Anthropology*
Jessica Millward, *Assistant Professor of History*
Gonzalo Navajas, *Professor of Spanish*
Jane O. Newman, *Director of European Studies and Professor of Comparative Literature*
Kristin Peterson, *Assistant Professor of Anthropology*
Nasrin Rahimieh, *Director of the Dr. Samuel M. Jordan Center for Persian Studies and Culture, Professor of Comparative Literature, and Maseeh Chair in Persian Studies and Culture*
Janelle Reinelt, *Professor Emerita of Drama*
Belinda Robnett, *Associate Professor of Sociology*
Fatimah Tobing Rony, *Associate Professor of Film and Media Studies*
Annette Schlichter, *Associate Professor of Comparative Literature*
Ulrike Strasser, *Associate Professor of History*
Heidi Tinsman, *Associate Professor of History*
Rudolpho D. Torres, *Professor of Planning, Policy, and Design*
Jon Wiener, *Professor of History*

Graduate Program

The Ph.D. program in Culture and Theory provides a strong theoretical and critical approach to race, gender, and sexuality studies. It combines the established strengths in critical theory at UCI with its core supporting interdisciplinary units in African American Studies, Asian American Studies, Chicano/Latino Studies, and Women's Studies, as well as the Critical Theory Emphasis. Interdisciplinary in nature, the program uses a problem-oriented

approach to issues of race, gender, and sexuality in diasporic, transnational, and postcolonial contexts, as they are engaged broadly in the humanities, social sciences, and arts.

The Ph.D. program in Culture and Theory is designed to take full advantage of the combined expertise of the nationally and internationally prominent faculty at UCI whose work exemplifies the best in contemporary, critical, interdisciplinary studies in the humanities, social sciences, and the arts.

ADMISSION

PLEASE NOTE: The Ph.D. Program in Culture and Theory is not accepting applications for the 2010–11 academic year.

Applicants must have earned a bachelor's, master's, or equivalent degree in any discipline in the humanities, arts, or social sciences.

Applicants submit official transcripts, statement of purpose, personal history (U.S. citizens and permanent residents only), three letters of recommendation, aptitude scores from the Graduate Record Examination, and a sample of written work. In addition, an interview may be required. Incoming students are admitted for fall quarter only, and the deadline for applications is December 15.

COURSE CREDIT

Students who enter the program with a Master's degree from another institution may receive credit for prior graduate work, depending on the assessment of the Executive Committee after the student is admitted and before the beginning of the student's second year. The procedure for formally requesting course credit is detailed in the Program Handbook.

REQUIREMENTS

A. Culture and Theory 200A, B, C. Basic to the curriculum, this three-quarter core sequence provides a solid foundation in critical and cultural theories, their philosophical genealogies and institutional histories, and interdisciplinary methodologies. The core sequence also provides the space for an intellectual coherence and cohort building for Culture and Theory graduate students who will be taking most of their other courses in supporting departments and programs.

B. Seven additional theoretical courses drawn from sets of offerings in the core supporting interdisciplinary units, the Critical Theory Emphasis, and other course offerings by core and affiliated faculty, which may include Humanities 260 and 270. One of these courses must be focused on research methods. Working closely with a faculty advisor and committee, students set up a coherent course of study related to one or more of the areas explored in the core courses. Typically the seven courses will revolve around a set of theoretical problems, e.g., feminist theory and practice, critical race studies, sexualities, postcolonialism, transnational circuits, globalization, theorizing the political, philosophical debates on ethics, the intersections of visuality and textuality, to name a few.

   The theoretical problem courses are centered on the philosophical and theoretical approaches that form the basis of much work in critical, cultural, and social theory regarding race, gender, and sexuality studies.

C. Six courses on a focused area of study. This might include concentrations within and across a department, within the Critical Theory emphasis, or in one of the core supporting interdisciplinary units. In the latter case, students will take the dedicated core courses of a Graduate Emphasis. Students could also choose to work on a coherent area of focused study devised with their advisor. The courses in a focused area of study address a particular field in which various forms of critical theory have been applied, as well as a focus on groups, nations, and regions: examples include globalization, racism and the welfare state, diasporas of particular kinds, human rights, anti-colonial resistance movements in particular regions, Muslim women and questions of the veil, the Harlem Renaissance, Asian American feminism, modernity and race.

D. Culture and Theory 280. In this independent study course taken during their second year, students expand and develop a seminar paper into the Master's paper, with the guidance of their faculty advisor.

E. Students must TA in a Humanities or Social Sciences department or program for a minimum of three quarters. They are also required to take the teaching seminar and workshops associated with the course in which they teach.

F. Culture and Theory 290. Students take this one-unit research and prospectus seminar in their third and fourth years to enable systematic progress toward their dissertation.

G. Additionaly, students are expected to participate regularly in the Culture and Theory Colloquium, a series of events comprised of lectures, conferences, and performances sponsored by the program and allied units, particularly in the social sciences and the arts. Each year, the Colloquium will also include academic workshops (e.g., faculty and student works-in-progress, as well as on grant writing and on framing the dissertation project) and professionalization workshops (e.g., preparation for conferences and, later, for the job market). In addition to exposure to diverse ideas and development of practical techniques, participation in the Colloquium is intended to strengthen relations among students, and between students and faculty who are otherwise stretched across several units and schools.

Master's Paper and M.A. Degree: During their second year, students work with their faculty advisor to expand and develop a seminar paper into a Master's paper. A Master's paper expands a seminar paper to a version that is of near-publishable quality. Upon completion of the paper, the faculty advisor and two other core faculty members will participate in an assessment of student's work to date.

Ph.D. students will receive the M.A. degree after the satisfactory completion of the three core courses, seven theoretical problem courses, six courses on a focused area of study, and the Master's paper. Those students who complete the M.A. requirements, but whose committees assess their work as not meeting the standards for the Ph.D., will receive a terminal M.A. degree.

Qualifying Examination: Students work with a committee comprised of five faculty members, including one outside member, to draw up reading lists and head notes on four topics, as well as a dissertation prospectus. Three of these topics should relate to the major areas of study outlined in the 200A, B, C core course sequence, and one should relate to the student's area of disciplinary or focused study. The examination itself will be comprised of a written and oral exam. A student shall advance to candidacy upon successful passing of the Qualifying Exam and fulfillment of the language requirement, normally at the end of the third year. For a more detailed explanation of the Qualifying Exam, the timeline for its preparation, and composition of its committee, consult the Program Handbook.

Language/Symbolic Systems Requirement: By the time they qualify for candidacy, students must demonstrate through course work or examination the ability to do research in two ancient or modern languages (other than English). Students may petition to have expertise in statistics, mathematics, or computer science replace one of these language requirements, if they have achieved appropriate proficiency and if the work can be shown to be clearly relevant to their field.

Dissertation: The dissertation topic should be drawn from a focused area of study, chosen in consultation with the dissertation advisor and other committee members. Students will draw up their dissertation committee, which must consist of at least three members, at least two of whom must be drawn from the core faculty in the program whose interests match the topic chosen for the thesis. Dissertations must be approved by the student's dissertation committee and submitted to the executive committee.

Time to Degree: The normative time for advancement to candidacy is four years. The normative time for completion of the Ph.D. is seven years, and the maximum time permitted is eight years.

Courses in Culture and Theory

***(Schedule of Classes* designation: Clt&Thy)**

200A Identity and Difference (4). Introduction to scholarship on social movements, institutions, and theories relating to the rise of identities based on race, gender, ethnicity, class, and sexuality.

200B Power and Resistance (4). Focusing on questions of power and resistance, examines theorists, mostly from the middle twentieth century to the twenty-first century, whose work has led to the study of revolutions and resistance movements and their centrality in cultural theory.

200C Movement and Displacement (4). Focusing on epistemologies of contemporary cultural theory, probes the genealogies of ideas of movement and settlement. Examines ways in which epistemologies of movement and displacement produce texts and contexts of knowledge formation.

280 Independent Study (4) F, W, S. Limited to students who have not yet received the M.A. degree. May be repeated for credit.

289 Topics in Culture and Theory (4) F, W, S. Seminars on various topics in Culture and Theory. May be repeated for credit as topics vary.

290 Research and Prospectus Seminar (2) F, W, S. Bi-weekly seminar required for third- and/or fourth-year students. Students make presentations of dissertation prospectus for discussion. All graduate students welcome to attend and participate. Meant especially for students preparing for formal presentation of prospectus. Satisfactory/Unsatisfactory only. May be repeated for credit.

299 Dissertation Research (4 to 12) F, W, S. Dissertation research in Culture and Theory. Satisfactory/Unsatisfactory only. May be repeated for credit.

Supporting courses in participating programs and departments: In addition to the courses listed above, the following courses are open to Culture and Theory students:

Critical Theory: Humanities 260A-B-C; 270
Asian American Studies: 200A, B; 201
Women's Studies: 200A, B; 201; 210A; 260A
Chicano/Latino Studies: 212; 213; 217; 220E-F; 230; 289

Other departmental courses: These are already existing courses, most of the topics vary in nature, that are open to Culture and Theory graduate students when they are taught by Core or Affiliate faculty, and when they treat one of the fields covered in the core course sequence. Each quarter the Culture and Theory program office will compile a list of available, relevant departmental courses taught by Core and Affiliate Faculty. The course lists are arranged in a set of rubrics in order to make it easier for students to devise a coherent program of study in consultation with their advisors. Students are not, however, limited, to these rubrics and may devise a problem or areas of their own for the six-course "problem" requirement: Philosophical Foundations of Critical Theory; Critical Theory/Theory at the Border of Disciplines; Intersections of Gender/Race/Class Sexuality; Feminism; Critical Race Studies; Nation, Colonialism, Postcolonialism, Globalization; Reading, Visuality, Textuality; Theorizing the Aesthetic, the Ethical, the Political; Media/Mass, Popular and High Cultures; Disciplinary, Interdisciplinary Methodologies.

DEPARTMENT OF EAST ASIAN LANGUAGES AND LITERATURES

443 Humanities Instructional Building; (949) 824-2227
Martin W. Huang, **Department Chair**

Faculty

Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture* (modern Korea, postcolonial and colonial discourse, popular culture, anthropology)
Edward Fowler, Ph.D. University of California, Berkeley, *Professor of Japanese* (modern Japanese literature, cultural studies, film)
James Fujii, Ph.D. University of Chicago, *Associate Professor of Japanese and Comparative Literature* (modern Japanese literature; critical theory and cultural studies)
Michael A. Fuller, Ph.D. Yale University, *Associate Professor of Chinese* (Chinese poetry and poetics, the cultural and intellectual contexts for poetry, aesthetic theory, linguistic issues in classical Chinese)
Hu Ying, Ph.D. Princeton University, *Associate Professor of Chinese* (narrative literature, translation theory, feminist theory)
Martin W. Huang, Ph.D. Washington University, *Department Chair of East Asian Languages and Literatures and Professor of Chinese* (narrative theories and traditional Chinese fiction)
Kyung Hyun Kim, Ph.D. University of Southern California, *Associate Professor of Korean Culture and of Film and Media Studies* (East Asian cinema, modern Korea, cultural theory)
Susan B. Klein, Ph.D. Cornell University, *Associate Professor of Japanese* (premodern and modern theater and dance, Japanese religions, feminist critical theory)
Bert Scruggs, Ph.D. University of Pennsylvania, *Assistant Professor of Chinese* (modern Sinophone fiction and film, postcoloniality, translation, and cultural studies)
Serk Bae Suh, Ph.D. University of California, Los Angeles, *Assistant Professor of East Asian Languages and Literatures* (modern Korean and Japanese literature; cultural studies; modern Korean and Japanese intellectual history; colonial and postcolonial studies with emphasis on Japanese colonialism in Korea from 1905 to 1945 and the Korean minority in Japan)

Affiliated Faculty

Ackbar Abbas, M. Phil. University of Hong Kong, *Department Chair and Professor of Comparative Literature and Professor of Film and Media Studies* (globalization, Hong Kong and Chinese culture, postcoloniality, critical theory)
Qitao Guo, Ph.D. University of California, Berkeley, *Associate Professor of History* (Late Imperial China, social and cultural history)
Kenneth L. Pomeranz, Ph.D. Yale University, *UCI Chancellor's Professor of History* (modern Chinese)
Anne Walthall, Ph.D. University of Chicago, *Co-Director of the Minor in Asian Studies and Professor of History and of East Asian Languages and Literatures* (early modern and modern Japan)
Jeffrey Wasserstrom, Ph.D. University of California, Berkeley, *Professor of History* (modern China, student movements and comparative revolutions)
Bert Winther-Tamaki, Ph.D. Institute of Fine Arts, New York University, *Associate Professor of Art History* (Modern Japanese art, Asian American art, art and nationalism)

Contemporary East Asian societies are vibrant and complex, and they are heirs to rich cultural traditions that continue to inform the present. The four majors offered by the Department of East Asian Languages and Literatures provide students the opportunity to explore these societies and cultures in all their diversity, and to pursue their study of East Asia across national and regional boundaries. The Department houses both undergraduate and graduate (Ph.D.) programs.

Undergraduate Program

The Department offers four undergraduate majors: the B.A. degree program in East Asian Cultures; the B.A. degree program in Chinese Studies (with two emphases: Chinese Language and Literature, and Chinese Culture and Society); the B.A. degree program in Japanese

Language and Literature; and the B.A. degree program in Korean Literature and Culture. In addition, minors are offered in Chinese Language and Literature, Japanese Language and Literature, and Korean Literature and Culture.

Major in East Asian Cultures. The curriculum for the major in East Asian Cultures focuses on the regional dynamics of cultural and social transformations in East Asia. Students benefit from an multidisciplinary approach to the study of intra-regional relationships between East Asian countries in order to situate them in their broader global contexts. By integrating the study of East Asia with theoretical issues that shape the study of world culture in general, students gain the dual perspectives derived from examining East Asian cultures on their own terms and from recognizing the affinities these civilizations share, and the conflicts they encounter in their interactions with the rest of the world.

Major in Chinese Studies. The major in Chinese Studies offers two emphases: Chinese Language and Literature, and Chinese Culture and Society. The Language and Literature emphasis enables students to understand the extensive and rich literary, historical, social, and aesthetic achievements of China by studying its language, literature, film, religion, and other cultural accomplishments in depth. The Culture and Society emphasis stresses a multidisciplinary examination of modern Chinese culture and society that includes the perspectives of both the humanities and the social sciences. The major emphasizes the complementarity of these approaches in understanding the complexity of the forces that have shaped contemporary China.

Major in Japanese Language and Literature. The curriculum for Japanese Language and Literature enables students to understand the extensive and rich literary, historical, social, and aesthetic achievements of Japan by studying its language, literature, film, religion, and other cultural accomplishments in depth.

Major in Korean Literature and Culture. The curriculum for Korean Literature and Culture enables students to understand the extensive and rich literary, historical, social, and aesthetic achievements of Korea by studying its language, literature, film, religion, and other cultural accomplishments in depth.

PLANNING A PROGRAM OF STUDY

The student should plan a coherent program that both fulfills the requirements of the major and covers the student's areas of interest in allied fields outside East Asian Languages and Literatures.

Students who plan to enroll in a language course in Chinese, Japanese, Korean, or Vietnamese will be placed on the basis of a written test and oral interview in the respective language, regardless of their language background or proficiency, unless they have taken previous course work in the same language at UCI. (The number of years of high school-level study is taken into account only as a reference.) The written test is typically administered through the Testing Office; the oral interview, by the appropriate faculty, who will evaluate students' oral/aural abilities in the target language and consider results from the written placement test and any prior exposure to the language to determine their proper placement level. In the case of some languages, students in the first-year levels will be placed in either heritage classes (for students who have had exposure to the language in question through family ties) or non-heritage classes (for students with no exposure).

The faculty encourages students who are serious about improving their East Asian language ability in reading, writing, and speaking to take advantage of opportunities to immerse themselves in the relevant language by studying abroad through the University's Education Abroad Program (EAP) or through the International Opportunities Program (IOP). Students can gain substantially from first-hand experience of the culture they have studied academically while still making progress toward their UCI degree. Programs are available for one quarter, one semester, or one year. More information is available from academic counselors; see also the Center for International Education section of the *Catalogue.*

CAREERS FOR THE MAJOR

Studies in the East Asian programs will give students the preparation needed to pursue a career involving these important Pacific Rim nations. In an era in which the United States is seeking to come to grips with the challenges and opportunities presented by this vital area of the world, the training in language, literature, and culture offered by the departmental majors will serve students well in a variety of endeavors, such as international business, law, government service, journalism, teaching, and other careers involved with public affairs.

Focused undergraduate study in the language and literary and cultural traditions of an East Asian country is also a valuable preparation for those students intent upon pursuing graduate study in any field of East Asian language or culture.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Language Other Than English Placement and Progression: See page 253.

Departmental Requirements for the Majors

Four separate majors: East Asian Cultures, Chinese Studies, Japanese Language and Literature, and Korean Literature and Culture.

East Asian Cultures

A. Chinese 2C, Japanese 2C, or Korean 2C.

B. Two quarters of East Asian Languages and Literatures 155, with different topics.

C. East Asian Languages and Literatures 190

D. Nine additional upper-division courses in the areas of East Asian literature, culture, history, art history, linguistics, film and media, religion, philosophy, gender studies, or comparative literature, at least three of which must pertain to a country other than the one of language specialization. Up to four of these courses (or more by petition) may be taken outside the Department, with the approval of the undergraduate advisor.

Chinese Studies: *Emphasis in Chinese Language and Literature*

A. Chinese 3C or equivalent.

B. Chinese 100A-B-C or three upper-division courses offered by the Department on pre-modern (pre-1911) Chinese literature or culture.

C. Chinese 101A, B, C.

D. East Asian Languages and Literatures 190.

E. One upper-division course dealing with the literature or culture of another East Asian country.

F. Four additional courses in Chinese literature, history, art history, linguistics, comparative literature, film and media, religion, gender studies, or philosophy, of which one may be a lower-division East Asian course offered by the Department.

Chinese Studies: *Emphasis in Chinese Culture and Society*

A. Chinese 2C or equivalent.

B. Two courses selected from History 171D, 171E, or 171F.

C. East Asian Languages and Literatures 190.

D. Three upper-division courses on China offered by the Department.

E. Two approved upper-division courses dealing with the literature, religion, culture, history, or society of another East Asian country.

F. Two approved upper-division courses in the School of Social Sciences dealing with China.

G. Two additional courses in Chinese language, literature, history, art history, linguistics, comparative literature, film and media, religion, gender studies, or philosophy, of which one may be a lower-division East Asian course offered by the Department. (Courses from the School of Social Sciences may be substituted with departmental approval by petition.)

Japanese Language and Literature

A. Japanese 3C or equivalent.

B. East Asian Languages and Literatures 190.

C. Two upper-division courses dealing with premodern Japanese literature or culture, or Japanese 100A and 100B.

D. One upper-division course dealing with modern Japanese literature and culture, or Japanese 101A.

E. One upper-division course dealing with the literature or culture of another East Asian country.

F. Six additional courses in Japanese literature, culture, history, art history, linguistics, film and media, religion, philosophy, gender studies, or comparative literature, of which one may be a lower-division East Asian course offered by the Department.

Korean Literature and Culture

A. Korean 3C or equivalent.

B. East Asian Languages and Literatures 130, 140, and 190.

C. Two courses in Korean history from History 173D, 173E, 173F.

D. Four courses in Korean literature, culture, history, art history, linguistics, film and media, religion, philosophy, gender studies, or comparative literature, of which one may be a lower-division East Asian course offered by the Department.

E. Three upper-division courses dealing with the literature or culture of another East Asian country.

Residence Requirement for the Majors: At least five upper-division courses required for the major must be completed successfully at UCI. Students are encouraged, however, to complete up to a year of their language study in approved programs of study abroad.

Requirements for the Minors

Three separate minors: Chinese Language and Literature, Japanese Language and Literature, and Korean Literature and Culture.

Chinese Language and Literature: A three-quarter sequence selected from Chinese 3A-B-C, 100A-B-C, or 101A, B, C; and four courses selected from the East Asian Languages and Literatures offerings on Chinese topics and/or the upper-division courses in Chinese.

Japanese Language and Literature: Either Japanese 3A-B-C, 100A-B, or 101A, B, C; and four courses (or five courses, if the 100A-B sequence has been chosen) selected from the East Asian Languages and Literatures offerings on Japanese topics and/or the upper-division courses in Japanese.

Korean Literature and Culture: Korean 2A-B-C or equivalent; East Asian Languages and Literatures 130 and 140; one course dealing with Korean visual culture (examples: Korean cinema, visual art); and four upper-division courses selected from the East Asian Languages and Literatures offerings on Korean topics.

Residence Requirement for the Minors: A minimum of four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Program

The Department offers a Ph.D. degree program in East Asian Languages and Literatures, with concentrations in Chinese, Japanese, and East Asian Cultural Studies. The M.A. degree may be awarded to Ph.D. students in progress toward the doctoral degree.

The graduate program emphasizes rigorous training in language and textual analysis, with equal attention given to the historical, social, and cultural dimensions of literary study. In addition to more traditional vocabularies of criticism and theory, the curriculum encourages exploration of recent challenges to established conceptual and methodological frameworks. The program builds on the foundation of a faculty whose research interests engage major issues in Chinese, Japanese, and Korean literature and culture, while developing connections with the larger community of scholarship at UCI.

Because the graduate program is designed to prepare students for both college-level teaching and advanced research, each student will be required to serve, under direct faculty supervision, as a teaching assistant in an appropriate undergraduate course offered through the Department. As noted below, one quarter's worth of this teaching may be counted as part of the required course work toward completion of the degree.

Assuming that a student is enrolled full-time and enters the program with no major deficiencies in background or training, the normative time needed to complete the Ph.D. degree is seven years from matriculation. The maximum time permitted is eight years. For students admitted with an M.A. degree or its equivalent from another institution, certain course requirements may be waived upon the approval of a faculty advisory committee, with a consequent reduction in normative time for completion of the Ph.D.

The following graduate emphases are available: Asian American (see the Asian American Studies section); Critical Theory (see the Humanities Special Programs section); Feminist Studies (see the Women's Studies section); Visual Studies (see the Visual Studies section); and Comparative Literature (see below, following the Ph.D. program requirements).

MASTER OF ARTS IN EAST ASIAN LANGUAGES AND LITERATURES

Students are not admitted to an M.A.-only degree program but may be granted an M.A. in recognition of progress toward the Ph.D., normally after six quarters of course work and submission of two approved seminar papers, which will serve as the M.A. examination.

DOCTOR OF PHILOSOPHY IN EAST ASIAN LANGUAGES AND LITERATURES

Requirements for Admission

In addition to meeting the general requirements for admission to graduate study at UCI, specified by the Graduate Division, all students must present the following for review by an admissions committee composed of members of the faculty in East Asian Languages and Literatures: records of prior scholastic performance, including all college transcripts; three letters of recommendation; samples of written work; and aptitude scores from the Graduate Record Examination. Although the Department does not require entering students to have received an undergraduate degree comparable to its own, it recommends as much preparation in an East Asian language as possible. It also welcomes applications from

students whose language training may not be as extensive but who have shown promise in the study of related disciplines. The study of appropriate European languages is encouraged as well.

General Requirements

Upon admission to the program, the student is assigned a graduate advisor, in consultation with whom an advisory committee consisting of two additional faculty members is constituted. The student and committee plan a program of study consisting of 15 graduate courses.

Before advancement to candidacy (normally after three years of graduate study), the student must have (1) completed required course work as detailed below; (2) prepared one paper of publishable quality; (3) completed language requirements as listed below; (4) prepared five research reports on current scholarly articles to be decided upon in consultation with the faculty advisor; and (5) passed the qualifying examinations on four topics to be selected in consultation with the faculty advisory committee no more than two quarters before the examinations are to be taken. At least one of the topics should be related directly to the student's projected area of specialization in dissertation research.

Students who complete the qualifying examinations successfully are advanced to candidacy for the Ph.D. degree. The normative time for advancement to candidacy is four years. They then write their doctoral dissertation on a topic developed in consultation with the faculty advisory committee. Some period of study abroad, for enhancement of language proficiency and/or dissertation research, is strongly encouraged.

Concentration in Chinese

Course Work. Each student is required to complete three courses from Chinese 201–204; Chinese 211A-B or 212A-B; Chinese 213A-B; Chinese 214; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on a relevant topic in literary or cultural theory. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

Language Requirements. Before advancement to candidacy, all students must have completed four years of modern Chinese, two years of classical Chinese, and three years of modern Japanese, and have demonstrated reading proficiency in another appropriate language. Much of this work may, of course, have been completed prior to admission. In addition, the requirement for a second year of classical Chinese may be fulfilled by taking three reading courses in classical literature.

Concentration in Japanese

Course Work. Each student is required to complete three courses from Japanese 201–205; Japanese 211A-B or 212A-B; Japanese 213A-B; Japanese 214; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on relevant topics in literary or cultural theory. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

Language Requirements. Before advancement to candidacy, all students must have completed four years of modern Japanese and one year of classical Japanese, and have demonstrated reading proficiency in another appropriate language. In addition, students emphasizing classical Japanese are required to take one year of classical Chinese. Much of this work may, of course, have been completed prior to admission.

Concentration in East Asian Cultural Studies

Course Work. Each student is required to complete four Theory and Cultural Studies graduate courses; four graduate courses in Chinese, Japanese, or Korean; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on relevant topics. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

Other Requirements. Before advancement to candidacy, all students must have completed examinations in four areas as determined upon consultation with faculty advisors. These areas will vary according to the interests of the student; examples might be Colonial and Postcolonial Theories; Modernity and East Asia; Critique of Asian Studies as a field; Gender, Class and East Asia; Visual Culture and Japan; and Theorizing Minority Status in East Asia. All students must have completed four years of Chinese, Japanese, or Korean, or the equivalent. Three years or the equivalent in a second East Asian language is recommended. Much of this work may, of course, have been completed prior to admission.

Graduate Emphasis in Comparative Literature

A student must submit an application for the emphasis to the Graduate Advisor in East Asian Languages and Literatures, and the Department tracks the student's progress and fulfillment of requirements. Upon graduation, students receive a letter from the Graduate Advisor certifying completion of the emphasis.

Course Work. Students take at least five graduate courses in the Department of Comparative Literature, three of which may be counted toward the seven electives required for the Ph.D. in East Asian Languages and Literatures. One of the five courses should be Criticism 220A or 220C, or Comparative Literature 200; at least three of the courses should have a Comparative Literature (CL) designation; and one of the courses could be Humanities 270 (Critical Theory).

Qualifying Examination and Dissertation. One topic on the Ph.D. Qualifying Examination should be on a Comparative Literature topic and should be prepared with a professor from the Comparative Literature program who will serve as a member of the student's examination committee. The student should be able to demonstrate some expertise in comparative critical methodologies as well as knowledge of a literature and tradition other than those in East Asian. One member of the student's dissertation committee will normally be from the Comparative Literature program.

Courses in East Asian Languages and Literatures

(Schedule of Classes **designation: E Asian)**

UNDERGRADUATE

20 Asian Religions (4). An introduction to Asian religions (Hinduism, Buddhism, Confucianism, Taoism, Shamanism) including both elite doctrinal aspects and forms of more popular religiosity. May be taken for credit three times as topics vary. **(VIII)**

55 Introduction to East Asian Cultures (4). Interdisciplinary courses organized each year around a broad theme designed to introduce students to the cultures of East Asia. Topical organization of courses addresses issues that have been of importance historically and are reshaping East Asia today. May be taken three times for credit as topics vary. **(IV, VIII)**

110 Topics in Chinese Literature and Society (4). Studies in Chinese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topic varies. **(VIII)**

116 Topics in East Asian Religions (4). Selected topics in the religions of East Asia, e.g., Buddhism, Daoism, Shintô, Christianity, popular religions. May be taken for credit three times as topics vary. **(VIII)**

117 Topics in East Asian Philosophy (4). Selected topics in the philosophies of East Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as Philosophy 117. May be repeated for credit as topics vary. **(VIII)**

120 Topics in Japanese Literature and Society (4) F. Studies in Japanese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topic varies. **(VIII)**

125 Topics in East Asian Applied Linguistics (4). In-depth examination of selected topics in applied linguistics, with a particular emphasis on language acquisition and language pedagogy. May be taken for credit three times as topics vary. Concurrent with East Asian Languages and Literatures 225.

130 Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Anthropology 163K and Sociology 175A. **(VIII)**

140 Topics in Korean Literature and Society (4) F. Students in Korean texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topics vary. **(VIII)**

150 Topics in East Asian Literature in Translation (4). East Asian literary works in translation. Taught in English. May be repeated for credit as topics vary. **(VIII)**

155 Cultural Studies in East Asia (4). Interdisciplinary and theoretical introduction to issues in cultural studies that are pertinent to the study of East Asia. All readings in English. May be taken for credit three times as topics vary. **(VIII)**

160 East Asian Cinema (4). Study of East Asian cinema from historical, theoretical, and comparative perspectives. Taught in English. May be repeated for credit as topics vary. Same as Film and Media Studies 160 when topic is appropriate. **(VIII)**

170 Gender in East Asia (4). Explores the construction of gender in East Asian cultures and literatures. Pays close attention to the specificity of historical, cultural, and literary contexts of East Asia as it investigates various theoretical and critical perspectives on gender and sexuality. May be taken for credit three times as topics vary. **(VIII)**

190 Junior-Senior Colloquium (4) W. Specialized courses dealing with primary sources; required reports and papers. Each colloquium reflects the instructor's intellectual interest and is conducted as a discussion group. Limited to 15 students. Prerequisite: consent of instructor. May be taken for credit three times as topics vary. **(VIII)**

192 Junior-Senior Seminar (4). Specialized courses that require analysis of a literary or cultural topic or problem through research and writing of two short and one long original research papers for a total of 4,000 words minimum. Each seminar is offered in a quarter following East Asian Languages and Literatures 190 and is related to the colloquium's subject. Prerequisite: East Asian Languages and Literatures 190 in preceding quarter or consent of instructor; satisfactory completion of the lower-division writing requirement. May be taken for credit three times as topics vary. **(VIII)**

198 Directed Group Study (1 to 4). Directed group study on special topics. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

199 Independent Study (1 to 4). Investigation of special topics through directed reading in translation. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units as topics vary.

GRADUATE

216 Topics in East Asian Religions (4). Selected topics in the religions of East Asia, e.g., Buddhism, Daoism, Shintô, Islam, shamanism. May be taken for credit three times as topics vary.

220 Topics in East Asian Cultural Studies (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

225 Topics in East Asian Applied Linguistics (4). In-depth examination of selected topics in applied linguistics, with a particular emphasis on language acquisition and language pedagogy. May be taken for credit three times as topics vary. Concurrent with East Asian Languages and Literatures 125.

260 Topics in East Asian Cinema (4). An examination of the possibilities of East Asian cinematic narrative. Possible topics: cinematic history; cinema in popular culture; comparisons with literary texts; major auteurs. Emphasis on technical as well as on thematic aspects. Includes readings in film theory. Prerequisite: East Asian Languages and Literatures 160 or consent of instructor. May be repeated for credit as topics vary.

290 Independent Study (2 to 4). Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be counted toward course requirements for the Ph.D. May be repeated for credit.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

399 University Teaching (4). Limited to Teaching Assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

Courses in Chinese

***(Schedule of Classes* designation: Chinese)**

UNDERGRADUATE

1A-B-C Fundamental Mandarin Chinese (5-5-5) F, W, S. Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing. Conducted in Mandarin Chinese using the Pinyin system of Romanization. Chinese 1A-B-C and Chinese S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Fundamentals of Mandarin Chinese (7.5-7.5) Summer. First-year Mandarin Chinese in an intensified form. Same as Chinese 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Chinese S1AB or 1B, or two years of high school Chinese. Chinese S1AB-BC and Chinese 1A-B-C may not both be taken for credit. (S1BC: **VI**)

2A-B-C Intermediate Mandarin Chinese (5-5-5) F, W, S. Conversation, reading, and composition skills; new Chinese characters introduced. Conducted in Mandarin Chinese. Prerequisite for 2A: Chinese 1C or S1BC with a grade of C or better, three years of high school Chinese, or equivalent; for 2B: Chinese 2A with a grade of C or better, or equivalent; for 2C: Chinese 2B with a grade of C or better, or equivalent. Placement test required. **(VIII)**

3A-B-C Advanced Mandarin Chinese (4-4-4) F, W, S. Emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation. Conducted in Mandarin Chinese. Prerequisite: Chinese 2C or equivalent. **(VIII)**

100A-B-C Classical Chinese (4-4-4) F, W, S. Introduction to classical Chinese grammar and vocabulary with emphasis on reading basic texts. Prerequisite: Chinese 3C, Japanese 3C, Korean 3C, or the equivalent. **(VIII)**

101A, B, C Fourth-Year Mandarin Chinese (4, 4, 4) F, W, S. *Continued* emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation through intensive study and analysis of specific literary texts. Prerequisite: Chinese 3C or equivalent. **(VIII)**

115 Chinese Literature: Advanced Texts (4). Designed for students with near-fluency in reading Chinese. Readings may include both literary and philosophical work by important writers, but the emphasis is on literary texts and writings that interpret those texts. Prerequisites: Chinese 101A, B, C or consent of instructor. May be taken for credit three times as topic varies. **(VIII)**

199 Independent Study (1 to 4). Investigation of special topics through directed reading in Chinese. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

GRADUATE

201 Readings in Traditional Chinese Narrative and Prose (4). Close reading of selected premodern prose texts such as historical narratives, novels, short stories, and essays. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

202 Readings in Traditional Chinese Poetry (4). Close readings of selected premodern poetic texts. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

203 Readings in Modern Chinese Literature (4). Close readings of selected modern literary texts. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

204 Readings in Chinese Literary and Cultural Theory (4). Close readings of selected texts in premodern criticism and theory. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

211A-B Studies in Traditional Chinese Narrative and Prose (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

212A-B Studies in Traditional Chinese Poetry (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

213A-B Studies in Modern Chinese Literature (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

214 Studies in Chinese Literature and Cultural Theory (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C and/or Chinese 101C, as specified. May be repeated for credit as topics vary.

230 Topics in Chinese Literature and Culture (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 101 or equivalent. May be repeated for credit as topics vary.

290 Independent Study (4). Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

Courses in Japanese

***(Schedule of Classes* designation: Japanse)**

UNDERGRADUATE

1A-B-C Fundamental Japanese (5-5-5) F, W, S. Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing all three Katakana, Hiragana, and Kanji scripts. Conducted in Japanese. Japanese 1A-B-C and Japanese S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Fundamentals of Japanese (7.5-7.5) Summer. First year Japanese in an intensified form. Same as Japanese1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Japanese S1AB or 1B, or two years of high school Japanese. Japanese S1AB-BC and Japanese 1A-B-C may not both be taken for credit. (S1BC: **VI**)

2A-B-C Intermediate Japanese (5-5-5) F, W, S. Conversation, reading, and composition skills; approximately 400 Kanji characters are introduced. Conducted in Japanese. Prerequisite for 2A: Japanese 1C or S1BC with a grade of C or better, three to four years of high school Japanese, or equivalent; for 2B: Japanese 2A with a grade of C or better, or equivalent; for 2C: Japanese 2B or S2AB with a grade of C or better, or equivalent. Placement test required. Japanese 2A-B-C and Japanese S2AB-BC may not both be taken for credit. **(VIII)**

S2AB-BC Intermediate Japanese (7.5-7.5) Summer. Second-year Japanese in a time-intensified form. Equivalent to Japanese 2A-B-C during the academic year. For description, see Japanese 2A-B-C. Prerequisite for S2AB: Japanese S1BC or 1C with a grade of C or better, three to four years of high school Japanese, or equivalent; for S2BC: Japanese S2AB or 2B with a grade of C or better, or equivalent. Japanese S2AB-BC and Japanese 2A-B-C may not both be taken for credit. **(VIII)**

3A-B-C Advanced Japanese (4-4-4) F, W, S. Emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation. Conducted in Japanese. Prerequisite for 3A: Japanese 2C or S2BC with a grade of C or better, or equivalent; for 3B: Japanese 3A with a grade of C or better, or equivalent; for 3C: Japanese 3B with a grade of C or better, or equivalent. **(VIII)**

100A-B Classical Japanese (4-4) F, W or W, S. Introduction to classical Japanese grammar and vocabulary with emphasis on reading and analysis of basic texts. Prerequisite for 100A: Japanese 3C with a grade or C or better, or equivalent, or consent of instructor; for 100B: Japanese 100A with a grade of C or better, or equivalent, or consent of instructor. **(VIII)**

101A, B, C Fourth-Year Japanese (4, 4, 4) F, W, S. Continued emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation through intensive study and analysis of a variety of texts. Prerequisite: Japanese 3C or equivalent. **(VIII)**

115 Japanese Literature: Advanced Texts (4). Designed for students with near-fluency in reading Japanese. Texts include both fiction and nonfiction by important writers, and may be supplemented and contextualized where needed by literary criticism and cultural-studies texts in English. Prerequisites: Japanese 101A, B, C or consent of instructor. May be taken for credit three times as topic varies. **(VIII)**

180 Topics in Japanese Literature (4). Special topics through directed reading in Japanese. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. **(VIII)**

199 Independent Study (1 to 4). Investigation of special topics through directed reading in Japanese. Paper required. May be repeated for credit provided topic varies. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

GRADUATE

201 Readings in Traditional Japanese Prose (4). Close reading of selected premodern prose texts, including tales, journals, travel journals, essays. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

202 Readings in Traditional Japanese Poetry or Drama (4). Close reading of selected premodern poetic or dramatic texts. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

203 Readings in Modern Japanese Literature (4). Texts include both fiction and nonfiction by important writers, and may be supplemented where needed by literary criticism and cultural-studies texts in English. Prerequisite: Japanese 101C or equivalent, or consent of instructor. May be repeated for credit as topics vary.

204 Readings in Traditional Japanese Literary and Cultural Theory (4). Close reading of selected texts involving literary criticism and/or aesthetics. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

205 Readings in Japanese Religion (4). Close readings of selected Japanese religious texts. Prerequisite: Japanese 101C or equivalent, or consent of instructor. May be repeated for credit as topics vary.

211A-B Studies in Traditional Japanese Prose (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

212A-B Studies in Traditional Japanese Poetry or Drama (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

213A-B Studies in Modern Japanese Literature (4-4). A two-quarter, in-depth look at a major author and/or issue in modern Japanese literature. Seminar format. The first quarter is devoted to reading of the requisite texts; the second quarter, to the writing of a research paper. Prerequisite: Japanese 203 or consent of instructor. May be repeated for credit as topics vary.

214 Studies in Japanese Literary and Cultural Theory (4). Seminar, with topics varying from year to year. Research paper required. May be repeated for credit as topics vary.

215 Studies in Japanese Religion (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 101C or equivalent, or consent of instructor. May be repeated for credit as topics vary.

230 Topics in Japanese Literature and Culture (4). A topical study that addresses important issues in Japanese literature and culture. May focus on a specific writer or writers, or on a specific issue or set of related issues. Prerequisite: Japanese 203 or consent of instructor. May be repeated for credit as topics vary.

290 Independent Study (4). Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

Courses in Korean

(Schedule of Classes **designation: Korean)**

UNDERGRADUATE

1A-B-C Fundamentals of Korean (5-5-5) F, W, S. Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing. Conducted in Korean. Korean 1A-B-C and Korean S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Fundamentals of Korean (7.5-7.5) Summer. First-year Korean in an intensified form. Same as Korean 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: S1AB or Korean 1B, or two years of high school Korean. Korean S1AB-BC and Korean 1A-B-C may not both be taken for credit. (S1BC: **VI**)

2A-B-C Intermediate Korean (5-5-5) F, W, S. Designed to develop writing and reading skills as well as communicative skills in authentic situations. Students also introduced to aspects of Korean culture as related to lesson topics. Prerequisite for 2A: Korean 1C or S1BC with a grade of C or better, or equivalent, or consent of instructor; for 2B: Korean 2A with a grade of C or better, or equivalent, or consent of instructor; for 2C: Korean 2B with a grade of C or better, or equivalent, or consent of instructor. Placement test required. **(VIII)**

3A-B-C Advanced Korean (4-4-4) F, W, S. Focuses on developing advanced reading, writing, and translation skills with additional instruction in Chinese characters. Prerequisites: Korean 2C or equivalent; consent of instructor. **(VIII)**

101A, B, C Fourth-Year Korean (4, 4, 4). Continued emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation through intensive study and analysis of a variety of modern texts. Prerequisite: Korean 3C or equivalent. **(VIII)**

115 Korean Literature: Advanced Texts (4). Designed for students with near-fluency in reading Korean. Readings include modern Korean literary works (poetry, prose, and drama) by important writers. Emphasis is on the interpretation of the texts and writings that interpret those texts in the original language. Prerequisites: Korean 101A, B, C or consent of instructor. May be taken for credit three times as topics vary. **(VIII)**

180 Topics in Korean Literature (4). Special topics through directed readings in Korean. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. **(VIII)**

199 Independent Study (1 to 4). Investigation of special topics through directed reading in Korean. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

NOTE: For Vietnamese language courses, see Humanities Language Learning Program, pages 316–317.

DEPARTMENT OF ENGLISH

435 Humanities Instructional Building; (949) 824-6712
James Steintrager, **Interim Department Chair**

Faculty

Jonathan Alexander, Ph.D. Louisiana State University, *Campus Writing Coordinator and Associate Professor of English and Education* (writing studies, composition/rhetoric, new media studies, sexuality studies)

Elizabeth Allen, Ph.D. University of Michigan, *Associate Professor of English* (medieval literature, narrative and poetic form, literary history, theories of reception and hermeneutics)

Stephen A. Barney, Ph.D. Harvard University, *Professor Emeritus of English* (medieval literature and culture, allegory)

Jami Bartlett, Ph.D. University of California, Berkeley, *Assistant Professor of English* (narrative theory, the novel, literature and philosophy)

Carol Burke, Ph.D. University of Maryland, *Director of Religious Studies and Professor of English* (folklore, cultural studies, creative nonfiction)

James L. Calderwood, Ph.D. University of Washington, *Professor Emeritus of English* (drama, Shakespeare)

Ronald F. Carlson, M.A. University of Utah, *Director of Fiction, Programs in Writing, and Professor of English and Creative Writing* (fiction writing, the short story, twentieth-century American literature)

Jerome Christensen, Ph.D. Cornell University, *Professor of English* (British Romanticism, film studies)

Michael P. Clark, Ph.D. University of California, Irvine, *Vice Provost for Academic Planning and Professor of English* (Colonial American literature, critical theory)

Miles Corwin, M.A. University of Missouri School of Journalism, *Associate Professor of English* (immersion journalism, covering the criminal justice system and law enforcement, true crime, inner city education, affirmative action)

Rebecca Davis, Ph.D. University of Notre Dame, *Assistant Professor of English* (old and middle English literature, Piers Plowman, medieval religious culture, women's writing, medieval philosophy, representations of nature and animals in literature)

Robert Folkenflik, Ph.D. Cornell University, *Edward A. Dickson Professor Emeritus of English* (eighteenth-century, novel, biography, and autobiography)

Linda Georgianna, Ph.D. Columbia University, *Professor Emerita of English* (medieval literature and culture)

Richard Godden, Ph.D. University of Kent, *Professor of English* (twentieth-century American literature, literature of the American South, the relation between economic and literary forms)

Daniel M. Gross, Ph.D. University of California, Berkeley, *Director of Composition and Associate Professor of English* (history and theory of rhetoric, early modern literature and culture, Heidegger and rhetoric)

Erika Hayasaki, B.A. University of Illinois, Urbana-Champaign, *Assistant Professor of English* (literary journalism, narrative nonfiction, immersion journalism, youth culture, crime, poverty, education, urban affairs, death)

Rebeca Helfer, Ph.D. Columbia University, *Assistant Professor of English* (early modern literature and culture, Spenser, rhetoric)

Andrea K. Henderson, Ph.D. University of Pennsylvania, *Professor of English* (romantic literature, poetics)

John Hollowell, Ph.D. University of Michigan, *Senior Lecturer with Security of Employment Emeritus* (rhetorical theory, teaching of composition, American literature)

Laura H.Y. Kang, Ph.D. University California, Santa Cruz, *Department Chair of Women's Studies and Associate Professor of Women's Studies, Comparative Literature, and English* (feminist epistemologies and theories, cultural studies, ethnic studies)

Ketu H. Katrak, Ph.D. Bryn Mawr College, *Professor of Humanities, Comparative Literature, and English* (Asian American literature, postcolonial literature)

Arlene Keizer, Ph.D. University of California, Berkeley, *Director of the Culture and Theory Ph.D. Program and Associate Professor of English* (African American and Caribbean literature and culture, critical race and ethnic studies, feminist theory)

Peter Krapp, Ph.D. University of California, Santa Barbara, *Associate Professor of Fim and Media Studies and of English* (digital culture, media theory, cultural memory, history and theory of artificial worlds)

Michelle Latiolais, M.F.A. University of California, Irvine, *Professor of English and Creative Writing* (creative writing, fiction)

Rodrigo Lazo, Ph.D. University of Maryland, *Associate Dean of Humanities Undergraduate Study and Associate Professor of English* (Latino studies, American ethnic and minority literature, Cuba and Cuban American studies)

James Kyung-Lee, Ph.D. University of California, Los Angeles, *Associate Professor of Asian American Studies and English* (Asian American literature, urban studies, modern social movements, U.S. political economy)

Jayne E. Lewis, Ph.D. Princeton University, *Professor of English* (Restoration and eighteenth-century British literature)

Catherine Liu, Ph.D. City University of New York Graduate School and Center, *Director of the Humanities Center and Associate Professor of Film and Media Studies, Comparative Literature, and English* (critical theory, visual and literary culture, psychoanalysis, narrative theory and melodrama in film and literature, New Wave)

Julia Reinhard Lupton, Ph.D. Yale University, *UCI Chancellor's Fellow, Director of the Humanities Core Course, and Professor of English, Comparative Literature, and Education* (Renaissance literature, literature and psychology)

Juliet Flower MacCannell, Ph.D. Cornell University, *Professor Emerita of English* (eighteenth-century French literature, modern semiotics, comparative literature)

Steven Mailloux, Ph.D. University of Southern California, *UCI Chancellor's Professor of Rhetoric and English* (rhetoric, critical theory, American literature, law and literature)

James McMichael, Ph.D. Stanford University, *Director of Poetry, Programs in Writing, and Professor of English and Creative Writing* (contemporary poetry, poetry writing, prosody, Joyce)
Jack Miles, Ph.D. Harvard University, *UCI Distinguished Professor of English* (Biblical studies; religion and literature; religion and science; religion and international relations, especially in the Middle East)
J. Hillis Miller, Ph.D. Harvard University, *UCI Distinguished Research Professor of English and Comparative Literature* (Victorian literature, critical theory)
Robert L. Montgomery, Ph.D. Harvard University, *Professor Emeritus of English* (Renaissance literature, critical theory, comparative literature)
Jane O. Newman, Ph.D. Princeton University, *Director of European Studies and Professor of Comparative Literature and English* (sixteenth- and seventeenth-century German literature, contemporary theory and criticism, feminism)
Robert Newsom, Ph.D. Columbia University, *Professor Emeritus of English* (Victorian literature, theory of fictions)
Ngugi wa Thiong'o, *UCI Distinguished Professor of English and Comparative Literature* (African and Caribbean literatures, theater and film, performance studies, cultural and political theory)
Margot Norris, Ph.D. State University of New York, Buffalo, *UCI Chancellor's Professor of English and Comparative Literature* (modern Irish, British, American and continental modernism; literature and war)
Laura O'Connor, Ph.D. Columbia University, *Associate Professor of English and Comparative Literature* (British and American modernism, Irish literary studies, postcolonial theory)
Robert L. Peters, Ph.D. University of Wisconsin, *Professor Emeritus of English* (Victorian literature, contemporary poetry)
R. Radhakrishnan, Ph.D. State University of New York, Binghamton, *Professor of English and Comparative Literature* (critical theory, poststructuralism, democracy and minority discourse, nationalisms and diasporas, globalization, feminisms, transnationalism: race, gender, ethnicity)
Barbara L. Reed, Ph.D. Indiana University, *Senior Lecturer with Security of Employment Emerita, English* (American literature, children's literature)
Hugh Roberts, Ph.D. McGill University, *Associate Professor of English* (Romantic literature, eighteenth-century literature, Victorian poetry, literary theory, New Zealand literature)
Michael Ryan, Ph.D. University of Iowa, *Professor of English and Creative Writing* (American literature, creative writing, poetry, poetics)
Edgar T. Schell, Ph.D. University of California, Berkeley, *Professor Emeritus of English* (medieval and Renaissance literature)
Gabrielle Schwab, Ph.D. University of Konstanz, *UCI Chancellor's Professor of Comparative Literature and English* (modern literature, critical theory, psychoanalysis)
Barry Siegel, M.S. Columbia University Graduate School of Journalism, *Director of Literary Journalism and Professor of English* (literary journalism and creative nonfiction)
Victoria Silver, Ph.D. University of California, Los Angeles, *Associate Professor of English* (Renaissance literature, Milton)
James Steintrager, Ph.D. Columbia University, *Interim Department Chair of English and Associate Professor of English and Comparative Literature* (comparative literature, eighteenth-century French, German, and English literature and aesthetics)
Michael Szalay, Ph.D. The Johns Hopkins University, *Associate Professor of English* (twentieth-century American literature, film and media studies, corporate culture)
Brook Thomas, Ph.D. University of California, Santa Barbara, *UCI Chancellor's Professor of English* (American literature, literature and law)
Harold Toliver, Ph.D. University of Washington, *Professor Emeritus of English* (Renaissance and seventeenth-century literature, theory of genre)
Irene Tucker, Ph.D. University of California, Berkeley, *Associate Professor of English* (Victorian literature, history and theory of the novel, history of medicine and technology, Hebrew literature, literature and philosophy)
Ann J. Van Sant, Ph.D. University of California, Berkeley, *Associate Professor of English* (seventeenth- and eighteenth-century literature, eighteenth-century novel, women and fiction, satire)
Andrzej Warminski, Ph.D. Yale University, *Professor of English* (Romanticism, critical theory)
Henry Weinstein, J.D. University of California, Berkeley, *Clinical Professor of Law and English* (literary journalism)
Amy Wilentz, B.A. Harvard College, *Professor of English* (literary journalism, creative nonfiction, developing nations' journalism, opinion writing)
Geoffrey Wolff, Novelist and Biographer, *Professor Emeritus of English and Creative Writing* (creative writing, fiction, biography)

The Department of English is concerned with the nature and value of literature, the variety of approaches to literary works, and the relation of literary criticism to the intellectual issues of the day. Its main literary concerns are critical, theoretical, and historical. The Department recognizes its continuing obligation to help all students write English with clarity and grace.

Students are given the opportunity to participate in departmental affairs through elected representatives to departmental committees. Each quarter both undergraduate and graduate students taking classes within the Department have the opportunity to evaluate their courses and teachers.

CAREERS FOR THE ENGLISH OR LITERARY JOURNALISM MAJOR

The study of literature helps students express their ideas clearly, do independent research, and think analytically and imaginatively. These capabilities will help qualify majors for careers in education, law, technical writing, communications, journalism, public relations, business, and management. Departmental advisors encourage their students to investigate various career options before completing their undergraduate educations.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

All of the Department's areas of study emphasize a variety of critical approaches in the reading and criticism of literature. Two majors, as well as an emphasis in Creative Writing, are offered.

English. This major seeks to introduce students to the entire range of literatures written in English, from British and American to African, Asian, and Australasian literatures. The major emphasizes the differences among historical periods and various genres, and encourages exploration of a broad range of literary theories. It also offers students the opportunity to do significant work in Creative Writing.

Creative Writing is an emphasis within the English major focusing on the writing of poetry and fiction. The emphasis aims to encourage the creative powers of students while introducing them to the disciplines of reading and practical criticism, often in a workshop setting. Under certain circumstances, creative writing courses may partly satisfy the writing portion of the UCI general education requirement (Category I).

Literary Journalism. This major was created to meet the needs of a growing number of students who wish to read, study, and write nonfiction prose that has transcended the limits of daily journalism. This is prose that has evolved into a distinct branch of literature, prose that adopts the aims and techniques of the finest fiction. The program provides majors with a solid foundation in nonfiction writing and an equally solid background in areas such as literary history, which together will help make students more informed writers.

Literary Journalism majors take three intensive writing seminars, and are expected to develop a portfolio of work by graduation which they can present as evidence of their skill for purposes of employment or future education. At the same time, majors are

asked to take a comprehensive look at the theory, history, and context of literary journalism. Among other forms, they study and write narratives, memoirs, profiles, histories, and personal essays, in subject areas as varied as science, politics, justice, travel, sports, food, and popular culture.

While it differs from an applied journalism major that focuses primarily on newspaper writing, the major in Literary Journalism is excellent preparation for students planning to enter graduate programs in journalism, as well as for those interested in the many careers requiring sophisticated writing and communication skills.

REQUIREMENTS FOR THE B.A. DEGREE

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the English Major

A. English 28A (or 28D), 28B, and 28C (or 28E).

B. English 100, 101 (taken in satisfaction of upper-division writing).

C. English 102A, 102B, 102C, 102D, 105, 106.

D. At least three more Departmental (English, Literary Journalism, Writing) courses numbered 102 or above, excluding English 150, Writing 139, or Writing 179. An upper-division foreign literature-in-translation course may be substituted for one of the three courses.*

E. Completion of one of the following:

1. Two years of work in a single acceptable modern foreign language (through 2C) or equivalent, plus *either* one course in a foreign literature in which texts are read in the original language *or* two upper-division courses in foreign literatures in translation.*
2. Greek or Latin 1A-B-C and *either* 100A and two 103s, *or* 100B and two 104s.
3. Chinese 3C, Korean 3C, Japanese 3C, or Vietnamese 3C.

* Foreign literature-in-translation courses are offered in Classics, Comparative Literature, East Asian Languages and Literatures, French and Italian, German, and Spanish and Portuguese. Chinese 180, Comparative Literature 150 and 160, East Asian Languages and Literatures 160, Film and Media Studies 160, French 160, German 160, Japanese 180, Korean 180, and Spanish 160 when appropriate, also qualify as foreign language literature-in-translation courses.

Emphasis in Creative Writing: Students interested in poetry must complete English 28D, 100, Writing 30, 90, 101; and they may additionally take Writing 111 after submitting work in advance. Students interested in fiction must complete English 28E, 100, Writing 31, 91, 101; and they may additionally take Writing 110 and 113 after submitting work in advance. A further, optional course, Writing 115, permits students to develop their individual skills in a tutorial.

Residence Requirement for the English Major: English 100, 101, two 102s, and 106 must be completed successfully at UCI.

Departmental Requirements for the English Minor

Three courses selected from English 28A, 28B, 28C, 28D, 28E; and at least five English or Writing courses numbered 102 or higher (excluding Writing 139), although two courses from the following may be substituted: English 100, English 101, Writing 101.

Residence Requirement for the English Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the department undergraduate chair.

Departmental Requirements for the Literary Journalism Major

A. Literary Journalism 20, 21.

B. One course from the English 28 series*.

C. English 100, 105.

D. Literary Journalism 101A, 101B (three times, on various topics).

E. At least three more Departmental courses numbered 102 or above (excluding English 150, Writing 139, or Writing 179), for one of which may be substituted an upper-division foreign literature-in-translation course offered in the School of Humanities (that is, requisite courses in Classics, Comparative Literature, East Asian Languages and Literatures, French and Italian, German, Spanish and Portuguese).

F. Two upper-division History courses in a single regional or thematic focus area.

* Students can substitute Comparative Literature 60A or 60C for any one English 28 course.

Residence Requirement for the Literary Journalism Major: Literary Journalism 20, 21, 101A, three 101B courses, and English 100 must be completed successfully at UCI.

PLANNING A PROGRAM OF STUDY

Students should plan coherent programs of study with their faculty advisors, including undergraduate seminars, workshops and seminars in writing (for students choosing a Literary Journalism major or Creative Writing emphasis), and courses in allied areas outside the Department. It is possible to combine a cluster of courses in literature with other majors in the sciences and social sciences, and to use an English or Literary Journalism major as preprofessional training in government, law, or medicine. Students who wish advice in planning such programs should consult both the Department and people in their prospective professional areas.

A student who intends to continue with graduate work is urged to study a second foreign language before graduation.

Students are also encouraged to take advantage of the opportunity to study abroad through the Education Abroad Program. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

Graduate Program

The Department's three principal undergraduate offerings—English and American Literature, the English major with a Creative Writing emphasis, and Literary Journalism—are reflected in the graduate programs, which at this level, may also involve collaboration with the Department of Comparative Literature: M.A. and Ph.D. in English, M.F.A. in English (fiction/poetry), and an emphasis in Creative Nonfiction within the Ph.D. degree in English. The faculty is particularly equipped to guide students with special interests in criticism and theory, an area which candidates for the Ph.D. in English may stress by adding the Schoolwide Critical Theory emphasis. Applicants for graduate degrees in English must submit scores for the Graduate Record Examination (GRE) including the Subject Test in Literature in English. Ordinarily students are not admitted to the English program unless they plan to continue, and are qualified to continue, to the degree of Ph.D. Students are admitted to the M.F.A. program chiefly on the basis of submitted creative work.

Specific requirements for the graduate degrees will be established by consultation between members of the faculty and the candidate. First-year graduate students or candidates for the Master of Fine Arts in English (fiction/poetry) plan a program with an assigned advisor; candidates for the Ph.D. plan with an advisor and

three-person committee. At the time of the M.A. examination, the Graduate Committee evaluates the student's graduate career up to that point and offers advice about future prospects. Candidates for literary degrees are also encouraged to study philosophy, history, foreign languages and literatures, and the fine arts.

Only in exceptional circumstances will students be permitted to undertake programs of less than six full courses during the academic year. The normal expectation is enrollment in three courses each quarter; Teaching Assistants take two courses in addition to earning credit for University Teaching. Students who are not teaching should be able to complete course work in two years. The Ph.D. qualifying examination should be taken within a couple of quarters after courses are finished. The normative time for completion of the Ph.D. in English is seven years.

The Murray Krieger Fellowship in Literary Theory is intended for an outstanding entering graduate student who is pursuing the Ph.D. in English or Comparative Literature and who demonstrates a primary interest in theory as theory relates to literary texts. A range of other fellowships is also available to students in the Department.

Emphasis in Creative Nonfiction

Students admitted to the emphasis in Creative Nonfiction must meet all course, language, and examination requirements for the Ph.D. in English. Their course work must include (a) three writing workshops in nonfiction; (b) three courses in nonfictional literature or rhetoric; and (c) if needed for the projected dissertation, one course outside the Department. Students must also conduct a dissertation defense.

School Emphases

Schoolwide graduate emphases are available in Asian American Studies, Critical Theory, and Feminist Studies. Refer to the appropriate sections of the *Catalogue* for information.

ENGLISH

Master of Arts in English

Each candidate for the M.A. will be assigned to a graduate advisor who will supervise the student's program. The M.A. plan of study includes (1) the completion of course work, as advised, for three quarters or the equivalent; (2) demonstrated proficiency in reading a designated foreign language, modern or classical; and (3) the submission of materials (including a statement about work accomplished and plans for future study, and a sample essay) to the Graduate Committee, who will review and assess the student's progress, recommend whether further study toward the Ph.D. is advisable, and, if so, give advice about areas for further study.

The Department of English sponsors a Summer M.A. Program in English designed for teachers and returning students. The M.A. degree in English is awarded to candidates who complete 32 units of graduate course work through two consecutive summers in the program and submit an acceptable Master's essay. Applicants from outside the State of California may apply for the program.

Master of Fine Arts in English

The Master of Fine Arts (M.F.A.) is a degree in fiction writing or poetry. The M.F.A. degree is normally conferred upon the completion of a three-year residence. Each quarter the candidate will be enrolled in either the poetry or fiction section of the Graduate Writers' Workshop, which will constitute two-thirds of a course load, the other course to be selected in consultation with the student's advisor. It is expected that M.F.A. candidates will complete at least one supervised teaching seminar.

In addition to course work, the candidate is required to present as a thesis an acceptable book-length manuscript of poetry or short stories or a novel. The normative time for completion of the M.F.A. is three years, and the maximum time permitted is four years.

Doctor of Philosophy in English

The program for the Ph.D. in English requires about two years of full-time enrollment in regular courses beyond the B.A.; proficiency in the reading of two acceptable foreign languages, modern or classical; satisfactory performance on designated examinations; and the dissertation.

The languages acceptable depend upon the nature of the student's program as determined by the student's advisors. Reading competence in one of these languages must be established in the first year of residence, and competence in the second before the Qualifying Examination. Competence in the two languages required for the Ph.D. is verified through examination.

Upon completion of course work the student is examined in three areas: (1) a primary field; (2) a secondary field; and (3) theory and/or criticism.

Upon satisfactorily completing this Qualifying Examination, the student is admitted to candidacy for the degree. As soon after completion of the Qualifying Examination as is practical, the student presents a dissertation prospectus for the approval of the doctoral committee. The dissertation itself must also be approved by the committee, which may or may not require an oral examination on it. All work for the Ph.D. degree must be in courses limited to graduate students. The normative time for advancement to candidacy is four years. The normative time for completion of the Ph.D. is seven years, and the maximum time permitted is nine years.

Courses in English

***(Schedule of Classes* designation: English)**

LOWER-DIVISION

Satisfaction of the UC Entry Level Writing requirement is a prerequisite for all departmental courses. See the Requirements for a Bachelor's Degree section for information on fulfilling this requirement.

Descriptions of the topics to be offered in the undergraduate literary courses during a given year are available in the Department office in the fall.

28 The Nature of Literature F, W, S, Summer. Reading of selected texts to explore the ways in which these modes formulate experience. Students write several short analytic papers in each course; 28D and 28E also require creative writing. Prerequisite: satisfactory completion of the lower-division writing requirement.

28A The Poetic Imagination (4). (IV)
28B Comic and Tragic Vision (4). (IV)
28C Realism and Romance (4). (IV)
28D The Craft of Poetry (4). (IV)
28E The Craft of Fiction (4). (IV)

UPPER-DIVISION

100 History of Literary Theory and Criticism from the Classics to the Present (4) F, W. A series of lectures and discussions beginning with a focus on ancient critics and literary theorists, and pursuing the issues they raise from medieval times to modernity. To be taken by English majors as early as possible in the junior year. Prerequisites: three courses from the English 28 series, or Literary Journalism 20, 21, and an English 28 course.

101 Undergraduate Seminar: Applications in Literary Theory and Criticism (4) F, W, S. Open to upper-division majors in English only. Sections limited to 20 students. Each instructor defines a theoretical, critical, or conceptual topic (e.g., theme, approach, genre) and explores it through an emphasis on literary texts. To be taken as early as possible in the junior year. Prerequisites: three courses from the English 28 series, or Literary Journalism 20, 21, and an English 28 course; and satisfactory completion of the lower-division writing requirement. May be taken for credit twice as topics vary.

102 English and American Literary History F, W, S, Summer. Studies of works representative of historical periods of literature in English, with attention to literary history, treating at a minimum more than one author and more than one genre. Prerequisites: three courses from the English 28 series, or Literary Journalism 20, 21, and an English 28 course; English majors only. May be repeated for credit as topics vary.

102A Medieval and Renaissance Literature (4)

102B Restoration and Eighteenth-Century Literature (4)

102C Romantic and Nineteenth-Century Literature (4)

102D Twentieth-Century Literature (4)

103 Topics in Literature, Theory, and Criticism (4) F, W, S, Summer. A series of lectures on and discussions of announced topics in literary criticism, theory, history, genres, modes, major authors. Prerequisite: upper-division standing recommended. May be repeated for credit as topics vary.

105 Multicultural Topics in Literatures in English (4) F, W, S. Focuses on ethnic or minority literatures, or treats issues related to race and cultural identity. Prerequisite: upper-division standing recommended. May be repeated for credit as topics vary.

106 Advanced Seminar (4). Capstone course. Required of all English majors. Limited to 25 students. Focuses on a topic within the area of literatures in English. Provides intensive work on a single topic in the field of English in a discussion setting. Prerequisites: English 101 or Writing 101 and at least two upper-division English courses; English major and senior standing. May be taken for credit twice as topics vary.

150 Topics in Literature for Nonmajors (4). Major texts in English, American, and Comparative Literature explored for basic humanistic issues and themes, on announced topics. Primarily for upper- division students, but not requiring previous training in literature. May be repeated for credit as topics vary. May not be counted toward the upper-division requirements for majors.

160 English Language Cinema (4). Focuses on any one of the different cinematic traditions in the English-speaking world, from a historical theoretical, or comparative perspective. May be taken for credit twice as topics vary.

181 The Structure of English (4). An examination of American English phonology, morphology, and syntax. Useful for prospective teachers of English in elementary and secondary schools and for teachers of English as a second language. Prerequisite: Linguistics 3 or consent of instructor. Same as Linguistics 163B.

187 Selected Topics in English Linguistics (4)

198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

199 Reading and Conference (1 to 4). To be taken only when the materials to be studied lie outside the normal run of departmental offerings, and when the student will have no formal chance to pursue the subject. Prerequisites: consent of the student's advisor, the instructor, and the Department Chair.

Courses in Literary Journalism

***(Schedule of Classes* designation: Lit Jrn)**

LOWER-DIVISION

20 Introduction to Literary Journalism (4). Reading of selected texts to explore the ways in which literary journalism and related nonfiction modes formulate experience. Students complete a range of writing projects. Prerequisite: satisfactory completion of the lower-division writing requirement.

21 Reporting for Literary Journalism (4). Instruction and hands-on training in how to interview, report, research, and collect the types of information needed to write literary journalism. Prerequisite: satisfactory completion of the lower-division writing requirement.

UPPER-DIVISION

101A Lectures in the History and Theory of Literary Journalism (4). Required of beginning majors in Literary Journalism. Lectures on topics that explore the historical and theoretical dimensions of literary journalism. Prerequisites: Literary Journalism 20, 21, and one course from the English 28 or Comparative Literature 60 series or equivalent.

101B Literary Journalism Core Writing Seminar (4). Limited to 20 students. Writing seminars in announced specialized genres that students will both study and practice. Examples: "The Memoir"; "Review Writing"; "The Editorial"; "Writing Biography"; "The Profile"; "Political Writing." Prerequisites: satisfactory completion of the lower-division writing requirement and Literary Journalism 101A. May be taken for credit three times as topics vary. Students may enroll in a maximum of one 101B course per quarter.

103 Lectures on Topics in Literary Journalism (4). A series of lectures on, and discussions of, announced topics in literary journalism and the literature of fact. Examples: "Writing the Palate"; "Early Modern Women in the Public Sphere"; "Victorian Cultural Critics"; "Writing about War." May be repeated for credit as topics vary.

198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

199 Reading and Conference (1 to 4). To be taken only when the materials to be studied lie outside the normal run of departmental offerings, or when students have obtained internships at local publications. Prerequisites: consent of the student's advisor, the instructor, and the Literary Journalism Program Director.

Courses in Writing

***(Schedule of Classes* designation: Writing)**

LOWER-DIVISION

30 The Art of Writing: Poetry (4) F, W, S. Beginners' workshop in the writing of poetry, evaluation of student manuscripts, and parallel readings. May be repeated once for credit with a different instructor. **(I)**

31 The Art of Writing: Prose Fiction (4) F, W, S. Beginners' workshop in fiction writing, evaluation of student manuscripts, and parallel readings. May be repeated once for credit with a different instructor. **(I)**

37 Intensive Writing (6) F. Seminar, three hours; discussion, two hours. Offers instruction in the process of writing, rhetorical principles, and sentence-level mechanics. Provides guided practice in writing. Readings selected from current fiction and nonfiction; writing assignments require analysis of readings and demonstration of rhetorical principles. Successful completion of Writing 37 with letter grade of C or above satisfies the UC Entry Level Writing requirement and one quarter of the lower-division writing requirement. Students who earn a grade of C- or below must immediately enroll instead in Writing 39A, followed by 39B in a subsequent quarter. Students must satisfy the UC Entry Level Writing requirement before the beginning of their fourth quarter of residency. Prerequisite: students must have taken the Analytical Writing Placement Examination. Enrollment open only to recommended students. Only one course from Writing 37, 39A, or 39AP may be taken for credit. **(I)**

39A Fundamentals of Composition (4) F, W, S, Summer. Seminar, three hours. Deals with the writing of expository essays, principles of rhetoric, paragraph development, and the fundamentals of sentence-level mechanics. Frequent papers, some exercises. Successful completion of Writing 39A with a letter grade of C or above satisfies the UC Entry Level Writing requirement. Students who earn a grade of C- or below must repeat the course, normally in the next quarter of residency. Prerequisite: students must have taken the UC Analytical Writing Placement Examination with placement in Writing 39A. Students must satisfy the UC Entry Level Writing requirement before the beginning of their fourth quarter of residency. Only one course from Writing 37, 39A, or 39AP may be taken for credit.

39AP Fundamentals of Composition with Computer Lab (4) F, W, S, Summer. Seminar, three hours; computer lab, two hours. Deals with the writing of expository essays, principles of rhetoric, paragraph development, and the fundamentals of sentence-level mechanics. Frequent papers, some exercises. Successful completion of Writing 39AP with a letter grade of C or above satisfies the UC Entry Level Writing requirement. Students who earn a grade of C- or below must repeat the course, normally in the next quarter of residency. Prerequisite: students must have taken the Analytical Writing Placement Examination with placement in Writing 39AP. Students also directed to take the Academic English Placement Test must have completed all Academic English courses required as a result of that test. Students must satisfy the UC Entry Level Writing requirement before the beginning of their fourth quarter of residency, or immediately following completion of their Academic English requirement. Only one course from Writing 37, 39A, or 39AP may be taken for credit.

39B Critical Reading and Rhetoric (4) F, W, S, Summer. Seminar, three hours. Guided practice in the critical reading and written analysis of both popular and academic prose. Readings selected from literary, academic, journalistic, and fictional genres; writing topics require rhetorical analysis of readings and demonstration of rhetorical principles in student writing. Prerequisite: satisfaction of the UC Entry Level Writing requirement. Writing 39B and Writing 37 may not both be taken for credit. (I)

39C Argument and Research (4) F, W, S, Summer. Guided writing practice in argumentation, logic, and inquiry. Readings are selected from current nonfiction and from materials students select from the University Library. Research strategies emphasized. Prerequisite: Writing 37 or 39B. (I)

90 Intermediate Poetry Writing (4). Intermediate workshop in the writing of poetry, evaluation of student manuscripts, and parallel readings. Prerequisite: Writing 30 or equivalent. May be repeated once for credit with a different instructor.

91 Intermediate Fiction Writing (4). Intermediate workshop in the writing of fiction, evaluation of student manuscripts, and parallel readings. Prerequisite: Writing 31 or equivalent. May be repeated once for credit with a different instructor.

UPPER-DIVISION

101 Undergraduate Seminar: Applications in Literary Theory and Criticism for Creative Writing (4). Substitute for English 101 for Creative Writing emphasis students. Prerequisites: English 100; satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary.

109 Nonfiction and Journalism (4). The course develops out of Writing 38 for students with special competence for advanced work in journalism. Prerequisite: consent of instructor.

110 Short Story Writing (4) F, W, S. Three-hour workshop in short fiction; discussion of student writing and of relevant literary texts. May be repeated once for credit toward graduation, but not repeated for credit within the major. Prerequisite: consent of instructor.

111 Poetry Writing (4) F, W, S. Three-hour advanced poetry writing workshop; discussion of student writing and of relevant literary texts. May be repeated once for credit toward graduation, but not repeated for credit within the major. Prerequisite: consent of instructor.

113 Novel Writing (4). Three-hour advanced workshop in fiction writing; discussion of student writing and of relevant literary texts. Prerequisite: consent of instructor.

115 Conference in Writing (4). Primarily for writing emphasis seniors. May be repeated for credit toward graduation but not repeated for credit within the major. Prerequisite: consent of instructor.

139 Advanced Expository Writing (4) F, W, S, Summer. Study of rhetorical techniques; practice in writing clear and effective prose. Several essays of varying lengths, totaling at least 4,000 words. Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing. May not be counted toward the upper-division requirements for majors or minors. (I)

179 Advanced Composition for Teachers (4). Principles of formal composition and problems of teaching. Selecting handbooks and ancillary reading, marking papers, making assignments, and conducting workshops and tutorials. Prerequisites: satisfactory completion of the lower-division writing requirement and junior standing. Same as Education 179.

Graduate Courses

All graduate courses may be repeated when the topic varies. Descriptions of the topics to be treated in a given academic year are published by the Department in the fall. Enrollment in each graduate course requires the consent of the instructor. The courses are limited to registered graduate students, except for specially qualified fifth-year students seeking teaching credentials, who may enroll if they have first received permission from the Department's Graduate Committee and if space permits.

In addition to the following courses, graduate students in the Department of English might find Humanities 200 (The Nature and Theory of History) and Humanities 291 (Interdisciplinary Topics) of special interest.

ENGLISH

210 Studies in Literary History (4) F, W, S

215 Prospectus Workshop (2) F. Workshop for the writing of the graduate student prospectus for those who have completed their qualifying examinations. Topics covered and assignments completed culminate in a presentation of a draft of the prospectus in class. Biweekly discussions.

225 Studies in Literary Genres (4) F, W, S

230 Studies in Major Writers (4) F, W, S

235 Methods of Literary Scholarship (4)

255 Graduate Workshop in Academic Publishing (4) F, W, S. Reading and critique of student-authored essays with the goal of producing a publishable essay. Instructor leads discussion, meets with students individually, and provides an introduction to appropriate venues for publication and the process of submission, peer review, and revision. Satisfactory/Unsatisfactory only.

290 Reading and Conference (4) F, W, S

291 Guided Reading Course (4)

299 Dissertation Research (4 to 12) F, W, S. Satisfactory/Unsatisfactory only.

398 Rhetoric/Teaching of Composition (4) F, W. Readings, lectures, and internship designed to prepare graduate students to teach composition. Formal instruction in rhetoric and practical work in teaching methods and grading. Consent of instructor required.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

CRITICISM

220A, B Studies in Literary Theory and Its History (4, 4) F, W. Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English and American theorists. Same as Humanities 220A, B.

240 Advanced Theory Seminar (4) F, W, S

WRITING

250A-B Graduate Writers' Workshop (Fiction) (4-4) F, W, S. Satisfactory/Unsatisfactory only.

250C Graduate Writers' Workshop (Poetry) (8) F, W, S. Satisfactory/Unsatisfactory only.

251A-B Writing in Conference (Fiction) (4-4) F, W, S. Satisfactory/Unsatisfactory only.

251C Writing in Conference (Poetry) (8) F, W, S. Satisfactory/Unsatisfactory only.

252 Workshop/Nonfiction (4). Reading and critique of student manuscripts in creative nonfiction. The instructor leads discussions and meets with students on an individual basis. Satisfactory/Unsatisfactory only. May be taken for credit three times.

UNDERGRADUATE PROGRAM IN EUROPEAN STUDIES

152 Humanities Instructional Building; (949) 824-9290
Jane O. Newman, **Director**

Advisory Committee

Kai Evers, *Department of German*
Nancy McLoughlin, *Department of History*
Carrie Noland, *Department of French and Italian*
Amy Powell, *Department of Art History*
Santiago Morales-Rivera, *Department of Spanish and Portuguese*
Martin Schwab, *Departments of Philosophy and Comparative Literature*

Core Faculty

Elizabeth Allen, Ph.D. University of Michigan, *Department of English*
Deborah Avant, Ph.D. University of California, San Diego, *Department of Political Science*
Luis F. Avilés, Ph.D. Brown University, *Department of Spanish and Portuguese*
Nina Bandelj, Ph.D. Princeton University, *Department of Sociology*
Anke S. Biendarra, Ph.D. University of Washington, *Department of German*
Carolyn P. Boyd, Ph.D. University of Washington, *Department of History*
Ellen S. Burt, Ph.D. Yale University, *Departments of French and Italian and of Comparative Literature*
Russell Dalton, Ph.D. University of Michigan, *Department of Political Science*
Edward Dimendberg, Ph.D. University of California, Santa Cruz, *Department of Film and Media Studies*
Kai Evers, Ph.D. Duke University, *Department of German*
Sarah Farmer, Ph.D. University of California, Berkeley, *Department of History*
Zina Giannopoulou, Ph.D. University of Illinois, *Department of Classics*
James B. Given, Ph.D. Stanford University, *Department of History*
Elizabeth Guthrie, Ph.D. University of Illinois, *Department of French and Italian*
Gail K. Hart, Ph.D. University of Virginia, *Department of German*
Douglas M. Haynes, Ph.D. University of California, Berkeley, *Department of History*
James D. Herbert, Ph.D. Yale University, *Department of Art History*
Jayne E. Lewis, Ph.D. Princeton University, *Department of English*
Catherine Liu, Ph.D. City University of New York Graduate School and Center, *Departments of Film and Media Studies, Comparative Literature, and English*
Lynn Mally, Ph.D. University of California, Berkeley, *Department of History*
Anthony McGann, Ph.D. Duke University, *Department of Political Science*
Robert G. Moeller, Ph.D. University of California, Berkeley, *Department of History*
Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Department of Spanish and Portuguese*
Jane O. Newman, Ph.D. Princeton University, *Department of Comparative Literature*
Carrie J. Noland, Ph.D. Harvard University, *Department of French*
David T. Pan, Ph.D. Columbia University, *Department of German*
Amy Powell, Ph.D. Harvard University, *Department of Art History*
Gary Richardson, Ph.D. University of California, Berkeley, *Department of Economics*
Annette Schlichter, Ph.D. Humboldt University of Berlin, *Department of Comparative Literature*
Gabriele Schwab, Ph.D. University of Konstanz, *Department of Comparative Literature*
Martin Schwab, Ph.D. University of Bielefeld, *Departments of Philosophy and Comparative Literature*
Victoria Silver, Ph.D. University of California, Los Angeles, *Department of English*
John H. Smith, Ph.D. Princeton University, *Departments of German and Comparative Literature*
James Steintrager, Ph.D. Columbia University, *Departments of English and Comparative Literature*
Timothy Tackett, Ph.D. Stanford University, *Department of History*
Yuliya V. Tverdova, M.P.A. Binghamton University, *Department of Political Science*

Undergraduate Program

The program in European Studies provides undergraduates with an opportunity to study Europe from the vantage points of several disciplines in the humanities and social sciences. Because Europe is both a geographical place and an idea which changes throughout history, it has had different meanings at different times and in different places. The study of Europe thus requires an open, pluralistic, and interdisciplinary curriculum that takes a critical approach to the idea (or ideas) of Europe. The program provides a multidisciplinary view of Europe as a whole and of its historical, political, and cultural formation and global implications. It also provides a focus on a specific area of European experience that cuts across traditional disciplinary and national boundaries. Participation in an Education Abroad Program in a European country is strongly recommended for all European Studies majors.

Students may elect to emphasize one of the following areas: **Medieval Studies, Early Modern Europe (1450–1789), Modern Europe (1789–present), Encounters with the Non-European World, British Studies, French Studies, German Studies, Italian Studies, The Mediterranean World: Past and Present, Russian Studies,** or **Spanish/Portuguese Studies.** As an alternative, **students may define their own emphasis** in consultation with a program advisor and with the approval of the European Studies Advisory Board.

Because there are so many emphasis options within the major, students are required to consult the Director on a quarterly basis for academic advising.

CAREER OPPORTUNITIES

A degree in European Studies prepares its graduates to enter advanced degree programs in international business, history, law, and political science. The strong academic skills and professional orientation acquired by European Studies majors are necessary to pursue successful careers in such fields as international banking, law, journalism, management, public relations, publishing, and government service. Humanities graduates in general learn to express ideas clearly, do independent research, and think analytically and imaginatively—the required tools for success beyond the undergraduate career.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN EUROPEAN STUDIES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Requirements for the Major

Completion of two years of language (through the 2C level or equivalent) in French, German, classical Greek, Italian, Latin, Portuguese, Russian, or Spanish.

Fourteen courses, of which five may be lower-division:

A. History 70B.

B. European Studies 101A-B.

C. Six courses from an approved emphasis list (see sample below), four of which must be upper-division.

D. Four multidisciplinary electives: two courses in European History or Political Science or Social Science outside the student's emphasis, and two courses in European Literature or Arts outside the student's emphasis. NOTE: For the student with a focus on modern Europe, at least one of these courses must be on a pre-1789 topic; for the student with an emphasis in Medieval or Early Modern Europe, one of these courses must be on a post-1789 topic.

E. European Studies 190, taken to satisfy the upper-division writing requirement.

NOTE: One course from either the approved emphasis list or the elective category must be from the Encounters with the Non-European World emphasis.

NOTE: Courses are sometimes approved in more than one emphasis. Any course that appears on the approved list for a student's

emphasis cannot be used as a course outside the emphasis even if it also appears on other lists.

Quarterly consultation with the Director of European Studies is required.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Emphases and Approved Courses: The following list includes a few examples of courses that have been approved for each emphasis. The complete list is extensive and varies from quarter to quarter, depending upon course scheduling. For complete up-to-date information about approved courses, students are advised to consult the European Studies Web site at http://www.humanities.uci.edu/european_studies/.

Medieval Studies: Women and Gender in Late Medieval Literature (English 102A), Jewish History from Ancient to Early Modern (History 130A).

Early Modern Europe (1450–1789): Art of Venice (Art History 121), Milton (English 103), Tudor England (History 117A).

Modern Europe (1789–present): Modern European Art (Art History 134), German Literature and Culture in Translation (German 150), World War, Cold War, and Reunification: 1939– (History 122C).

Encounters with the Non-European World: Topics in East Asian Philosophy (East Asian Languages and Literatures 117), Topics in African American History (History 150), Indian and Colonial Societies in Mexico (History 161A).

British Studies: Elizabethan and Jacobean Drama (Drama 103), Medieval and Renaissance Literature (English 102A), Stuart England (History 117B).

French Studies: Problems in French Culture (French 110), French Cinema (French 160), Early Modern France: 1500–1774 (History 120C).

German Studies: Emergence of the German Nation: 1815–1890 (History 122A), Hegel to Nietzsche (History 127B).

Italian Studies: Studies in Southern Renaissance Art (Art History 121), Renaissance Europe (History 112A), Introduction to Italian Literature (Italian 101A).

The Mediterranean World: Past and Present: Studies in Greek Art (Art History 103), Classical Mythology (Classics 150), Later Roman Empire (History 105B).

Russian Studies: Twentieth-Century Russia (History 124B), Peoples and Cultures of Post-Soviet Eurasia (Political Science 154F), Topics in Russian Literature (Russian 150).

Spanish/Portuguese Studies: Introduction to Portuguese and Brazilian Literature (Portuguese 120A), Latin American Literature of the Twentieth Century (Spanish 130C), Literature in Translation (Spanish 150).

Requirements for the Minor

Ten courses are required:

A. History 70B.

B. European Studies 101A-B.

C. Three courses selected from a single emphasis (see sample list above and at http://www.humanities.uci.edu/european_studies/).

D. Four electives: *two* courses in European History or Political Science or Social Science outside the student's emphasis, and *two* courses in European Literature or Arts outside the student's emphasis, approved by petition to the European Studies Committee. NOTE: For the student with a focus on modern Europe, at least one of these courses must be on a pre-1789 topic; for the student with an emphasis in Medieval or Early Modern Europe, one of these courses must be on a post-1789 topic.

NOTE: Courses are sometimes approved in more than one emphasis. Any course that appears on the approved list for a student's emphasis cannot be used as a course outside the emphasis even if it also appears on other lists.

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Courses in European Studies

***(Schedule of Classes* designation: Euro St)**

101A European Studies Core I: Early Europe (Pre–1789) (4). Introduces students to multidisciplinary approaches to important themes in European society, culture, art, literature, and politics, encouraging students to see points of intersection among disciplines. Possible themes: the Concept of Europe in the Renaissance, Self and Other: Europe and Islam, Hybrid Cultures in Medieval Europe. Prerequisite: satisfactory completion of the lower-division writing requirement. Formerly Humanities 101A. **(VIII)**

101B European Studies Core II: Modern Europe (1789–Present) (4). Introduces students to multidisciplinary approaches to important themes in modern European society, culture, art, literature, and politics, encouraging students to see points of intersection among disciplines. Possible themes: Subjects, Citizens, and Representation; Europe in the World; European Revolutions in Art and Society. Prerequisite: satisfactory completion of the lower-division writing requirement. Formerly Humanities 101B. **(VIII)**

102 Topics in Early European History and Culture: Pre–1789 (4). Addresses historical and cultural events, issues, and texts (art, literature, music, political theory) from the pre-1789 period in more than one European country.

103 Topics in Modern European History and Culture: Post–1789 (4). Addresses historical and cultural events, issues, and texts (art, literature, music, political theory) from 1789 to present in more than one European country.

190 Senior Seminar in European Studies (4). Capstone research seminar. Students engage in rigorous, in-depth, interdisciplinary exploration of specific topics, periods, or themes, investigating and analyzing the intersection of material and discursive culture in different historical periods and geographical locations. Topics vary. Prerequisites: European Studies 101A, 101B, and consent of instructor; satisfactory completion of the lower-division writing requirement. Formerly Humanities 190.

199 Independent Study (1 to 4). Directed reading and research in consultation with a faculty advisor. Substantial written work required. Prerequisites: upper-division standing and consent of instructor. May be repeated for credit as topics vary.

DEPARTMENT OF FILM AND MEDIA STUDIES

2000 Humanities Gateway; (949) 824-6780
Victoria E. Johnson, **Department Chair**

Core Faculty

Ackbar Abbas, M. Phil. University of Hong Kong, *Department Chair and Professor of Comparative Literature and Professor of Film and Media Studies* (Hong Kong culture and postcolonialism, visual culture, architecture and cinema, cultural theory, globalization)

Eyal Amiran, Ph.D. University of Virginia, *Associate Professor of Comparative Literature and of Film and Media Studies* (digital media theory, twentieth-century literature, narrative and textual theory, psychoanalysis, modern and postmodern intellectual history)

Catherine Benamou, Ph.D. New York University, *Associate Professor of Film and Media Studies* (Latin American and Latina/Latino film and media, border cinema, Orson Welles and off-Hollywood cinema, film historiography, transnational media theory and community practice)

Sohail Daulatzai, Ph.D. University of Southern California, *Assistant Professor of Film and Media Studies* (cultural studies, postcolonial theory, race, internationalism, cultural politics of hip-hop, sports, cinema)

Edward Dimendberg, Ph.D. University of California, Santa Cruz, *Associate Professor of Film and Media Studies* (film history, audio-visual media and the built environment, contemporary architecture and urbanism, avant-garde cinema, modernism and modernity)

Kristen Hatch, Ph.D. University of California, Los Angeles, *Assistant Professor of Film and Media Studies* (American film history; childhood studies; theories and histories of gender and sexuality; reception studies; cultural studies)

Lucas Hilderbrand, Ph.D. New York University, *Assistant Professor of Film and Media Studies* (cultural and media studies, histories of technology, documentary, queer studies, audio, intellectual property)

Victoria E. Johnson, Ph.D. University of Southern California, *Department Chair and Associate Professor of Film and Media Studies* (history and critical theory of U.S. television, popular film, and media; politics of geography, race, gender, and sexuality in popular culture; cultural studies)

Kyung Hyun Kim, Ph.D. University of Southern California, *Associate Professor of East Asian Languages and Literatures and of Film and Media Studies* (modern Korea, Asian cinema, critical theory)

Peter Krapp, Ph.D. University of California, Santa Barbara, *Associate Professor of Film and Media Studies and of English* (digital culture, media theory, cultural memory, history, and theory of artificial worlds)

Felicidad "Bliss" Cua Lim, Ph.D. New York University, *Acting Associate Professor of Film and Media Studies* (Philippine and Hong Kong cinema; cinema and temporality; postcolonial and feminist film theory; fantastic cinema and transnational horror; taste cultures)

Catherine Liu, Ph.D. City University of New York Graduate School and Center, *Director of the Humanities Center and Associate Professor of Film and Media Studies, Comparative Literature, and English* (critical theory, psychoanalysis, science fiction, narrative theory and melodrama in film and literature, New Wave)

Glen Mimura, Ph.D. University of California, Santa Cruz, *Associate Dean of Graduate Study and Research and Associate Professor of Film and Media Studies* (minority, diasporic, and third cinemas; popular culture, the Western, queer theory and racialized sexuality)

Mark S. Poster, Ph.D. New York University, *Professor Emeritus of Film and Media Studies and of History* (theory and history of the media, theory of technology and culture, and Internet studies)

Fatimah Tobing Rony, Ph.D. Yale University, *Associate Professor of Film and Media Studies* (transnational cinema, documentary and ethnographic film, postcolonial studies, feminist film theory, film history and theory, film production)

Jared Sexton, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and of Film and Media Studies* (race and sexuality, policing and imprisonment, contemporary U.S. cinema and political culture, multiracial coalition, critical theory)

Roxanne Varzi, Ph.D. Columbia University, *Associate Professor of Anthropology* (visual anthropology, Iran, popular culture, war, media and religion)

Affiliated Faculty

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish* (Latin American and Chicano literatures)

Kai Evers, Ph.D. Duke University, *Assistant Professor of German* (twentieth-century German literature and film, modernism and Holocaust literature)

Edward Fowler, Ph.D. University of California, Berkeley, *Professor of Japanese* (modern Japanese literature, cultural studies, film)

Adriana M. Johnson, Ph.D. Duke University, *Associate Professor of Comparative Literature* (Latin American literature and film, subaltern studies, postcolonial studies, politics and culture)

Sally A. Stein, Ph.D. Yale University, *Professor Emerita of Art History* (American art, history of photography, feminist theory)

Frank B. Wilderson III, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and Drama* (film theory, Marxism, dramaturgy, black political theory)

Undergraduate Program

We liye in a world in which we are surrounded by electronic media in the form of images and sounds. Whether printed on roadside billboards or broadcast into our homes via television, the media greatly influence our sense of who we are and how we live. Yet so much of our exposure to the sights and sounds of film, TV, video, advertising, and new technologies is taken for granted. Those sights and sounds are so pervasive, and in many cases so enjoyable, that we rarely pause to consider how they act upon us and how we interact with them. An undergraduate education in Film and Media Studies provides students with an opportunity to explore the appeal and to begin to understand the operation of these complex meaning-producing machines we call cinema, television, and new digital technologies, and to interrogate the inter-relationships of visual media and sound and music as forms of media.

The course work for the B.A. degree program in Film and Media Studies trains students to read and understand the audio-visual languages of modern media and new technologies and to analyze images from socioeconomic, political, aesthetic, and historical perspectives. Learning these critical viewing skills involves learning new ways of seeing. The Film and Media Studies curriculum is systematic and comprehensive; upper-division courses have between 20 and 70 students and are typically taught by regular faculty. There are more than 300 Film and Media Studies majors enrolled at UCI.

The Department of Film and Media Studies familiarizes students with the history, theory, and art of cinema and other media. Courses focus on a range of topics, including directors, period styles, genres, national cinemas, the history and criticism of television, sound theory and popular music, and developments in new technologies. Additional courses offer students hands-on experience in video production and screenwriting. The program provides its majors with a thorough appreciation of the modern media's roles in contemporary society. Regular course offerings are complemented by film and video screenings and series at the School of Humanities Film and Video Center. Film and Media Studies, in cooperation with other units at UCI, regularly invites scholars, digital artists, directors, producers, and screenwriters to campus to share their work and perspectives with students.

Film and Media Studies at UCI is unique in its concentration on the history, theory, and criticism of cinema, television, popular music and sound, and new technologies. The faculty has published books and articles on these topics and others including fantastic cinema, avant-garde directors, ethnographic film, media and intellectual property, sound in film and media, hip-hop and cinema, television history, and theory of new technologies.

In order to cover the extra costs generated by the purchase and rental of media demanded by the specialized Film and Media Studies curriculum, the School of Humanities charges a laboratory fee to all students taking Film and Media Studies courses.

Film and Media Studies students can complete professional internships in the fields of film, television, or digital media production, distribution, writing, and related areas for elective course credit.

Through the Education Abroad Program (EAP), eligible Film and Media Studies students have the opportunity to study abroad and earn credit toward their degree during the school year. Students also may participate in Travel-Study offered through Summer Session. Information on these programs is available through the Film and Media Studies Office, the Education Abroad Program Office, and the Summer Sessions office.

CAREER OPPORTUNITIES

A degree in Film and Media Studies will provide students with a variety of opportunities leading to a career choice or to further education at the graduate or professional level. Graduates from the program have gone on to a host of different careers. Some have pursued graduate work in critical studies and/or production at leading institutions such as the University of California, Los Angeles, Chapman University, Columbia University, NYU, University of

Austin, Texas, and USC. Many are now at work in various sectors of the entertainment industry as feature film editors, executives in film and video distribution companies, network television producers, and independent filmmakers.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN FILM AND MEDIA STUDIES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the Major

A. Film and Media Studies 85A-B-C, 101A-B-C, 139 (taken to satisfy upper-division writing).

B. Film and Media Studies 110 or 111.

C. Film and Media Studies 117A or 120A.

D. Four courses from Film and Media Studies 112, 113, 114, 115, 117B*, 117C*, 120B*, 120C*, 130, 143, 144, 160, 161, 185, 190.

* Only two of the courses marked with an asterisk may be applied toward this requirement.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

Film and Media Studies 85A, 101A-B-C, and three of the following: 85B, 85C, 110, 111, 112, 113, 114, 115, 130, 143, 144, 160, 161, 185, 190.

Residence Requirement for the Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Study

In conjunction with the Department of Art History, the Department of Film and Media Studies offers a graduate program in Visual Studies. A description may be found in the Program in Visual Studies section, toward the end of the School of Humanities section.

Courses in Film and Media Studies

(Schedule of Classes **designation: Flm&Mda)**

LOWER-DIVISION

85A-B-C Image Culture

85A Visual Media and Contemporary Culture (4) F. An introduction to the study of visual media—such as advertising, movies, television, and video—and analysis of their role in contemporary culture. Introduces students to the critical vocabulary of film and television studies. **(IV)**

85B History of Broadcasting (4) W. History of broadcast media from the radio era to the present day, including social, political, institutional, and audience analysis as well as methods of visual and aural analysis of these media. Prerequisite: Film and Media Studies 85A or consent of instructor. **(IV)**

85C New Technologies (4) S. The study of electronic communication technologies, such as virtual reality and the Internet, from social, cultural, psychological, and political perspectives. Prerequisites: Film and Media Studies 85A-B or consent of instructor. **(IV)**

UPPER-DIVISION

101A-B-C History of Film

101A The Silent Era I (4) W. An investigation of the technological, economic, social, and aesthetic determinants of the cinema in its first 30 years. The formal strategies and historical importance of films by Méliès, the Lumières, Porter, Griffith, Murnau, Lang, Eisenstein, Pudovkin, and others. Prerequisites: Film and Media Studies 85A; open to Film and Media Studies majors and minors only.

101B The Sound Era I (4) S. Explores the formal strategies and sociohistorical dynamics of films made between 1930 and 1960, concentrating on representative cinemas and works by Lang, Riefenstahl, Renoir, Welles, De Sica, Ophüls, Kurosawa, and others. Prerequisites: Film and Media Studies 101A with a grade of C- or better; open to Film and Media Studies majors and minors only.

101C The Sound Era II (4) F. Studies narrative strategies and formal possibilities in films made since 1960, framing aesthetic questions in political, social, and economic terms, using selected features from Western and non-Western countries. Prerequisites: Film and Media Studies 101B with a grade of C- or better; open to Film and Media Studies majors and minors only.

110 Film and Media Theory (4) F, W, S, Summer. Survey of major directions in film and media theory. Various theories of mass culture, realism, auteurism, semiotics, feminism, cultural studies, and theories of other media. Offered as a seminar, with an emphasis on developing the student's ability to analyze and articulate a theoretical argument. Prerequisites: Film and Media Studies 85A-B-C, 101A-B-C, 139, and satisfactory completion of the upper-division writing requirement.

111 Media Theory and Practice (4) F, W, S. Seminar on theory and practice focusing on issues in film and media production and editing. Reading and exercises to understand aspects of film and media production (montage, sound, film movement, directing, and mise en scène), and how ideology works in tandem with style. Prerequisites: Film and Media Studies 101C, 120A, 139, satisfactory completion of the upper-division writing requirement, and consent of instructor. Open only to Film and Media Studies majors. **(IX)**

112 Genre Study (4) F, W, S. Critical approaches to the serial productions we call "genre" films, the patterns of recognition known as westerns, weepies, musicals, horror films, and others; televisual genres, such as sitcoms, drama, comedy, news, docudrama, police; Internet categories, such as chat-rooms, listservs, Web pages. Prerequisite: Film and Media Studies 85A or consent of instructor. May be repeated for credit as topics vary.

113 Narrative/Image (4) F, W, S. What relations do sound, image, and story assume in film, television, video, and Internet narratives? In what ways do these media interact with and borrow from each other and traditional storytelling media, like print and orality? How have the new media explored nonnarrative strategies and to what end? Prerequisite: Film and Media Studies 85A or consent of instructor. May be repeated for credit as topics vary.

114 Film, Media, and the Arts (4) F, W, S. A synthetic entity, film draws on both established and popular arts. Looks at visual media's exchanges with "high" and "low" culture, exploring its relation to areas such as photography, music, painting, and architecture. Prerequisite: Film and Media Studies 85A or consent of instructor. May be repeated for credit as topics vary.

115 Authorship (4) F, W, S. Theoretical and analytical discussions of visual media authorship, focusing on case studies of directors, producers, scriptwriters, and film, video, and digital artists. Prerequisite: Film and Media Studies 85A or consent of instructor. May be repeated for credit as topics vary.

117A Introduction to Screenwriting (4) F, W, S, Summer. Introduction to the technique and format of the screenplay, with a particular focus on its three act structural elements: coverage, treatment, and 60 beat outline. Prerequisite: Film and Media Studies 85A.

117B Intermediate Screenwriting (4) F, W, S. Exercises in the development of screenplays, with emphasis on formal and structural considerations of character development. Students work with the hero structure and other character development methodologies, such as method acting. Prerequisite: Film and Media Studies 117A.

117C Screenwriting Workshop (4) F, W, S. Continuation and intensification of work initiated in 117B. Students complete a full-length screenplay. Concentrates on both practical and technical concerns, addressing pragmatic and aesthetic questions in intensive small-group discussions. Prerequisite: Film and Media Studies 117B. **(IX)**

120A Basic Production (4) F, W, S, Summer. Introduction to the basic apparatus of video/film production. The elementary essentials of production, including the use of camera and lenses, lighting, editing, and sound. Prerequisite: Film and Media Studies 85A or consent of instructor. **(IX)**

120B Intermediate Production (4) W. Students work on individual and group projects, utilizing skills and insights introduced in Film and Media Studies 120A. Prerequisite: Film and Media Studies 120A or consent of instructor. **(IX)**

120C Production Workshop (4) S. As film and video are collaborative media, students form production groups and ultimately produce final 10–15 minute film/video projects. Prerequisite: Film and Media Studies 120B or consent of instructor. **(IX)**

130 Multicultural Topics in the Media (4) F, W, S. An investigation of media representations of gender, race, and sexuality in the United States. Topics include media images of and by one or more minority groups in the United States, including African Americans, Asian Americans, Chicano/Latinos, Native Americans, and gays and lesbians. Prerequisite: Film and Media Studies 85A or consent of instructor. May be repeated for credit as topics vary. **(VII)**

139 Writing on Film and Media (4) F, W, S. Practical exercises in film, TV, and other media criticism as a form of cultural analysis. Requires at least 4,000 words of assigned composition. Prerequisites: Film and Media Studies 85A and 101A; satisfactory completion of the lower-division writing requirement.

143 Critical Theory of Television (4) F, W, S. Introduction to critical, theoretical, scholarly understandings and analyses of television, which offer in-depth analyses of television programming, audience reception practices, and industry strategies of address. Prerequisites: Film and Media Studies 85A-B or consent of instructor.

144 Studies in New Media (4) F, W, S. Analyzes interpretations of the Internet and looks at empirical studies of various features of it. Asks students to explore the Internet and present their own conclusions about it. Prerequisites: Film and Media Studies 85A-B-C or consent of instructor.

160 National Cinemas (4) F, W, S. Period styles, national schools, oppositional movements, e.g., Classical Japanese Cinema, Italian Neorealism, Nouvelle Vague, Weimar Film, Cinema Nôvo. Same as Comparative Literature 160, East Asian Languages and Literatures 160, French 160, German 160, or Spanish 160 when topics are appropriate. May be repeated for credit when topics vary. **(VIII)**

161 Global Media (4) F, W, S. Comparative analysis of global media systems focusing on case studies in the development, embrace of, and resistance to media forms and practices from the 1850s to the present. Prerequisites: Film and Media Studies 85A-B-C or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

185 Television and New Media (4) F, W, S. An advanced seminar focusing on special topics in television and new media. Past examples have included courses on Media Marketing and Brand Identity; Television and Sound; Game Theory; and other issues related to popular culture, broadcast media, and new media technologies. May be repeated for credit as topics vary. Prerequisites: Film and Media Studies 85A-B-C or consent of instructor; open only to Film and Media Studies majors.

190 Special Topics in Film and Modern Media (4) F, W, S. Special issues concerned with film and media history, theory, and criticism. Examples include Gone Primitive (Anglo-American romance with the "primitive" in literature, film, other media); television criticism (review and analysis of models and modes of criticism applied to television since the 1940s). Prerequisite: Film and Media Studies 85A or consent of instructor. May be repeated for credit as topics vary.

197 Professional Internship (2 or 4) F, W, S. Professional internship in the broadcast, film, video, or Internet industries designed to provide students with closely supervised professional experience to enhance their understanding of media from industrial, historical, and critical perspectives. Journal and final report required. Prerequisites: Film and Media Studies 117A-B-C or 120A-B-C or consent of instructor; upper-division standing. Open only to Film and Media Studies majors and minors with a B average or better in Film and Media Studies course work. Pass/Not Pass only. May be taken for credit for a total of four units. **(IX)**

198 Creative Project (2 or 4) F, W, S. Creative project in screenwriting, filmmaking, videomaking, or Web or Internet design intended to provide advanced production and creative writing training beyond the Film and Media Studies 117A-B-C or 120A-B-C series. Final project required. Prerequisites: Film and Media Studies 85A and 117A-B-C or 120A-B-C or consent of instructor; 101A recommended; upper-division standing. May be taken twice for a credit total of eight units. **(IX)**

199 Directed Research (4) F, W, S. Directed reading and research under supervision of a faculty member in topic areas not covered by regular course offerings. Final research paper required. Prerequisites: upper-division standing and consent of instructor.

GRADUATE

Graduate courses satisfying the requirements of the program in Visual Studies are listed in the Visual Studies section of the *Catalogue.*

399 University Teaching (4) F, W, S. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

DEPARTMENT OF FRENCH AND ITALIAN

312 Humanities Hall; (949) 824-6407
Ellen Burt, **Department Chair** .

Faculty

Etienne Balibar, Docteur en philosophie, Katholieke Universiteit Nijmegen, *Professor of French* (critical theory, political philosophy), *Winter Quarter*
Dorian Bell, Ph.D. University of Pennsylvania, *Assistant Professor of French* (nineteenth-century French literature)
Ellen S. Burt, Ph.D. Yale University, *Department Chair of French and Italian and Professor of French and Comparative Literature* (eighteenth-century French literature and nineteenth-century poetry)
David Carroll, Ph.D. The Johns Hopkins University, *Professor Emeritus of French* (critical theory and twentieth-century French literature)
James Chiampi, Ph.D. Yale University, *Professor of Italian* (Italian Renaissance)
Suzanne Gearhart, Ph.D. The Johns Hopkins University, *Professor Emerita of French* (seventeenth- and eighteenth-century French literature, philosophy and literature)
Elizabeth Guthrie, Ph.D. University of Illinois, *Director of the French Language Program and Senior Lecturer with Security of Employment Emerita* (second-language acquisition and teaching)
Judd D. Hubert, Ph.D. Columbia University, *Professor Emeritus of French* (seventeenth- and nineteenth-century French literature)
Alice M. Laborde, Ph.D. University of California, Los Angeles, *Professor Emerita of French* (eighteenth-century French literature)
Carrie J. Noland, Ph.D. Harvard University, *Professor of French* (twentieth-century poetry; World War II and literature of the avant-garde)
Richard L. Regosin, Ph.D. The Johns Hopkins University, *Professor Emeritus of French* (sixteenth-century French literature)

Undergraduate Program in French

The Undergraduate Program in French offers a broad humanistic course of study designed for students in the liberal arts. The orientation of the program is multidisciplinary, where the study of literature is linked to critical, cultural, and historical concerns. Courses reflect the faculty's interest in the related disciplines of history, philosophy, anthropology, women's studies, cultural studies, and comparative literature, and express its conviction that the study of French literature and culture is enriched by pursuing its relations with other disciplines, fields, and cultures.

Lower-division language courses encourage students to participate in the creative process of language, to think in French as they learn to understand, speak, read, and write. These courses are taught entirely in French, and the approach to teaching stresses the interdependence of the four basic language skills and makes them mutually reinforcing. The Language Laboratory is used to complement classroom activity.

At the intermediate lower-division level, texts of contemporary literary and social interest provide the focus for advanced conversation, reading, and composition. After the second year, advanced courses in conversation and writing enable students to attain a greater degree of proficiency, preparing them for further study in the multidisciplinary upper-division program.

All upper-division offerings are taught in the seminar mode. Because classes are limited in size, they promote and encourage participation and discussion and facilitate direct contact with professors. In the introductory courses in literature, texts are studied in their historical context. The student learns to analyze and interpret different types of creative literature and is introduced to various critical concepts and vocabularies. At the more advanced level, the multidisciplinary courses bring together material and methodologies from the various disciplines in order to address interpretive problems of French literature, culture, and history. In recent years, courses have been offered in literature and political opposition, monsters and madness in Renaissance literature, cubism in painting and poetry, ethnography and literature, French cinema, autobiography, Francophone literature, and Albert Camus and Algeria. The content of courses changes yearly according to the interests of both faculty and students. In the junior or senior year, students have the opportunity, in the context of the capstone seminar (French 185), to pursue a single project in depth, leading to a final research paper. Students may take up to two courses from the Department offerings taught in English.

The Department strongly encourages its students to take advantage of the study-abroad programs in French-speaking countries to improve their language skills and gain invaluable cultural experience in a foreign university setting. The Department recommends the UC Education Abroad Program which currently runs programs of differing lengths in five locations in France (in Toulouse, Lyon, Grenoble, Bordeaux, and Paris). Credit for courses taken through study-abroad programs is available. Students are advised to discuss their course of study with the Chair before their departure and to arrange to bring home proof of their work.

Placement examinations are not required, although an optional placement examination is available. Students will be placed in French language courses according to their years of previous study. See page 253, Language Other Than English Placement and Progression.

Transfer students who have had a previous course (or courses) in French from another college or university who want to enroll in any French 1A through 2C course at UCI must take a copy of their transcript to the Humanities Undergraduate Study Office in order to receive authorization to enroll in the appropriate course.

Student representatives serve on departmental committees. These representatives also participate in Department meetings and are responsible for student evaluation procedures.

CAREERS FOR THE FRENCH MAJOR

The great majority of students who major in French pursue careers in business and commerce, where they can take advantage not only of their proficiency in French language but also of their knowledge of French literature and culture. Many students also go on to law school, to medical school, and to careers in the diplomatic service. In recent years, graduates have entered the field of education in increasing numbers. The Department's multidisciplinary approach to the study of literature teaches students to think critically and develops analytical skills that can be applied to a wide range of problems. It also helps students to develop the interpretive and writing skills necessary to express their own ideas clearly and persuasively. Whether they enter business or professions such as law, education, or government, French majors acquire the intellectual and communicative skills requisite for success.

The UCI Career Center provides service to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN FRENCH

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Language Other Than English Placement and Progression: See page 253.

Departmental Requirements for the Major

A. French 100A-B, 101A, B, C, 185, and eight other upper-division courses taught in the Department.

B. Students may take up to two courses from the Department offerings taught in English.

Residence Requirement for the Major: French 185 and at least four upper-division courses (above 101A, B, C) required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

A. French 100A-B.

B. Five French courses, four of these courses must be upper-division; four of these must be taught in French. Prerequisite: French 2C or equivalent.

Residence Requirement for the Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

PLANNING A PROGRAM OF STUDY

Students should consult with the faculty to plan a coherent program of courses to fulfill the major requirements. Students also should consult with faculty members concerning career plans in areas such as teaching, industry, journalism, law, and civil service.

Undergraduate Minor in Italian Studies

Language Other Than English Placement and Progression: See page 253.

The minor in Italian Studies is an interdisciplinary curriculum that allows students to go beyond second-year Italian and engage in various aspects of Italian culture by taking courses in Italian literature in the Department of French and Italian and other courses related to Italian history and culture in the Departments of Art History, Comparative Literature, English, Film and Media Studies, History, and Philosophy.

Departmental Requirements for the Minor

Italian 1A-B-C, 2A-B-C; and seven courses selected from the following two lists, when topics are appropriate. At least five of the seven courses must be from list A.

A. Art History 120, 121, 125; Film and Media Studies 160; History 112A; Italian 13, 101A, 101B, 150; Philosophy 132. (No more than *two* courses may be taken from any department, with the exception of Italian courses.)

B. Art History 107, 198; Classics 140, 150, 170; History 105A, 105B, 110C, 112D.

Residence Requirement for the Minor: At least four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken at an Italian university through the

UC Education Abroad Program, provided they are approved in advance by the Director of the Minor.

The Department strongly encourages its students to take advantage of the study-abroad programs in Italy to improve their language skills and gain invaluable cultural experience in a foreign university setting. The Department recommends the UC Education Abroad Program which currently runs programs of differing lengths in five locations in Italy (in Bologna, Padova, Milan, Siena, and Rome). Credit for courses taken through study-abroad programs is available. Students are advised to discuss their course of study with the Chair before their departure and to arrange to bring home proof of their work.

Graduate Program in French

The Department of French and Italian offers a graduate program in French with a strong theoretical, cultural, and multidisciplinary orientation. In addition to their specialties in the traditionally constituted fields of French literature, the faculty is actively involved in related disciplines such as philosophy, psychoanalysis, anthropology, history, women's studies, cultural studies, and comparative literature. A theoretical and multidisciplinary approach to literature is a demanding one requiring, among other things, a restless critique of its own evaluations and concepts.

In small seminars designed to stimulate intellectual exchange, students and faculty explore literature written in French within the context of relevant historical, cultural, or theoretical issues. They raise questions engaged by literary discourse and study critically the theories formulated to account for it. Courses tend to cross lines between disciplines and to emphasize both the close reading of texts and modern theories of history, culture, literature, and criticism. Students are encouraged to pursue their work in related fields outside the Department. They are also strongly encouraged to study abroad at some point during their graduate career.

The Department offers two tracks toward the Ph.D. in French: (1) Studies in French and Francophone Literature and Culture; and (2) an Interdisciplinary Option in French and Francophone Studies. The second option reflects the interdisciplinary teaching and research interests of the faculty and the increasingly comparative nature of French and Francophone studies across the country. It should appeal to students interested in double specialization or who already have an interdisciplinary background. This option would prepare students to teach French language and a range of culture and literature courses in French as well as in interdisciplinary humanities programs.

Students will ideally declare their intention to pursue one of the two tracks when they enter the program, but they must make a choice no later than during the oral portion of the M.A. examination in the fall or winter quarter of their second year of studies.

MASTER OF ARTS IN FRENCH

The Master of Arts degree is considered to be a step toward the Ph.D. degree; only students intending to pursue studies for the doctorate are admitted to the program. Performance on the Master's examination, usually given in the second year of graduate study, determines entrance into the doctoral program. Most candidates take a minimum of 11 graduate courses. All entering graduate students are counseled by the graduate advisor. During the winter quarter of each year, the teaching performance and academic record of each student who is a Teaching Assistant are evaluated. All graduate students are also given a written evaluation of their work on a course-by-course basis. Proficiency in a foreign language in addition to French is required for the M.A. degree (proficiency is defined as the equivalent of the level attained at the end of course 2C).

All M.A. candidates are required to pass the Master's examination. Plan I allows particularly well-prepared students to receive special permission to take nine courses and to write a short thesis, for which two course credits are given. Under Plan II candidates take a minimum of 11 courses and have the option of taking a written examination or of writing a research paper. The written examination consists of essays that demonstrate skills of literary analysis and an understanding of theoretical concepts and their application to the study of specific literary texts. The research paper involves a carefully developed and well-documented analysis that reflects extensive critical reading. In all cases students also take an oral examination that focuses on the written essays or the research paper and that seeks as well to test the student's broader knowledge.

The Master's examination is normally given at the end of the winter quarter of the second year of studies. Students who are Teaching Assistants normally take the examination in the fifth quarter of their studies.

Students transferring to the program from other graduate institutions may receive credit for up to two courses, subject to the approval of the Department. A maximum of five courses may be transferable from other UC graduate programs, with departmental approval.

For students who choose the interdisciplinary option when they enter the graduate program, their M.A. paper should have an interdisciplinary orientation, with one member from outside the Department representing their second discipline serving as a member of their M.A. committee.

DOCTOR OF PHILOSOPHY IN FRENCH

Upon successful completion of the Master's examination and admission to the Ph.D. program, or upon admission with a Master's degree from an accredited institution, a Ph.D. Examination Committee is appointed in consultation with the student. The Committee advises the student in the choice of courses to help prepare for the written and oral Qualifying Examinations leading to advancement to candidacy for the Ph.D. degree. The Committee is comprised of five faculty members: three from the Department, one from outside the Department who represents the student's outside area of specialization, and, for the qualifying examination, another faculty member not affiliated with the Department who represents the faculty-at-large. One member of the Committee is expected to direct the dissertation.

Language Requirements: A reading knowledge of two foreign languages relevant to the student's area of specialization and subject to the approval of the Ph.D. Examination Committee.

Course Requirements:

Track 1: Studies in French and Francophone Literature and Culture

A minimum of 15 graduate courses or seminars in French beyond the B.A. and three graduate courses outside the Department in areas related to the field of specialization are required.

A student may pursue the Ph.D. with particular emphasis in one of the following areas: (1) Critical Theory—additional course work in the Department and in the Critical Theory Emphasis program beyond the minimum number of three outside courses is required; (2) Comparative Literature—a minimum of five courses in the Comparative Literature Department is required; (3) Feminist Studies—refer to the Women's Studies section of the *Catalogue* for information.

Track 2: Interdisciplinary Option in French and Francophone Studies

Between 10 and 12 graduate courses or seminars in French beyond the B.A. and six–eight graduate courses outside the Department in a second discipline or program are required. The minimum total number of courses required before advancement to candidacy is 18.

Teaching: Since the overwhelming majority of Ph.D. candidates plan to teach, the Department recognizes its responsibility to train them as teachers. Therefore, as far as it is possible, all candidates without previous teaching experience are required to participate in a program of supervised teaching for at least one year.

Qualifying Examination—Written and Oral: Upon completion of course work, the student takes a series of examinations involving problems of a critical and interpretive nature. The Ph.D. Examination encourages focus and depth at a time when the student's area of specialization and eventual dissertation topic should be taking an increasingly clearer shape. In consultation with the Ph.D. Examination Committee, the student defines the precise nature and scope of four topics for the examination, which consists of written and oral parts. In fulfillment of the written requirement, the student writes three papers on three topics over the course of a quarter. The fourth topic is examined solely at the oral Qualifying Examination, which also devotes time to a presentation of the proposed dissertation topic and to further questions concerning the topics covered by the papers. Upon successful completion of the written and oral Qualifying Examinations, the student is advanced to candidacy for the Ph.D. degree. The normative time for advancement to candidacy is four years.

Dissertation: The dissertation topic chosen by the candidate will normally, but not necessarily, fall within one of the major fields covered by the Qualifying Examination. The dissertation itself must also be approved by the committee, which may or may not require an oral examination on it.

Three faculty members, chosen by the candidate, proposed by the Department, and appointed on behalf of the Dean of the Graduate Division and the Graduate Council, constitute the Doctoral Committee which directs the preparation and completion of the doctoral dissertation. The normative time for advancement to candidacy is four years. The normative time for completion of the Ph.D. is seven years, and the maximum time permitted is eight years.

Courses in French

***(Schedule of Classes* designation: French)**

LOWER-DIVISION

1A-B-C Fundamentals of French (5-5-5) 1A (F), 1B (F, W), 1C (W, S). Students are taught to conceptualize in French as they learn to understand, read, write, and speak. Classes are conducted entirely in French and meet daily. Language Laboratory attendance is required. French 1A-B-C and S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Fundamentals of French (7.5-7.5) Summer. First-year French in an intensified form. Same as French 1A-B-C during academic year. Prerequisite for S1AB:none; for S1BC: French S1AB or 1B, or two years of high school French. French S1AB-BC and 1A-B-C may not both be taken for credit. (S1BC: **VI**)

2A-B-C Intermediate French (4-4-4) 2A (F, S), 2B (F, W), 2C (W, S). Texts of contemporary literary or social interest provide the focus for more advanced conversation, reading, and composition. Classes are conducted entirely in French. Prerequisite: normally three years of high school French or one year of college French. French 2A-B-C and S2AB-BC may not both be taken for credit. **(VIII)**

S2AB-BC Intermediate French (6-6) Summer. Second-year French in an intensified form. Same as French 2A-B-C during academic year. For description, see French 2A-B-C. Prerequisite for S2AB: French S1BC or 1C with a grade of C or better, or three to four years of high school French, or the equivalent; for S2BC: French S2AB or 2B with a grade of C or better, or the equivalent. French S2AB-BC and 2A-B-C may not both be taken for credit. **(VIII)**

13 Conversation (4) F, W, S. Helps students increase their fluency and enrich their vocabulary. Taught in French. May be taken concurrently with French 2C. Prerequisite: French 2C or equivalent; or concurrent enrollment in French 2C.

50 French Culture and the Modern World (4) F, W, S. Introductory course for non-majors. Focuses on France's role in the modern world and its cultural connections to Asia, the Middle East, Africa, Europe, and the Americas. Taught in English. May be taken for credit three times as topics vary. **(IV, VIII)**

97 Fundamentals of French (with Emphasis on Reading) (4). Designed primarily for students interested in acquiring a solid reading knowledge of French, and to facilitate the understanding and translating of French texts dealing with a variety of disciplines. Not open to French majors or minors. Does not serve as a prerequisite for any higher-level French courses or fulfill any undergraduate foreign language requirement.

UPPER-DIVISION

100 Composition and Grammar Review

100A Advanced Grammar and Composition (4) F, W. Systematic review of grammar with written compositions on various topics. Students study and practice forms of descriptive and imitative writing, techniques of translation, and textual analysis including *explication de texte* of prose and poetry passages. Prerequisite: French 2C or equivalent.

100B Essay Writing (4) W, S. Trains students to write about literature in French, and introduces them to specific critical approaches and strategies for utilizing library resources, organizing arguments, and developing a coherent essay. Topics for weekly compositions drawn from texts of literary, historical, and social interest. Prerequisite: French 2C or equivalent; French 100A recommended.

101A, B, C Introduction to French Literature (4, 4, 4) F, W, S. Introduction to all of the genres of a narrowly defined period in relationship to a specific literary problem. In French. Prerequisites: French 100A and 100B recommended, but may be taken concurrently with French 101A, B, C. **(VIII)**

105 Advanced Composition and Style (4). Helps the student attain greater proficiency and elegance in the written language. Prerequisites: French 100B.

110 Problems in French Culture (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

116 Sixteenth-Century French Literature (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

117 Seventeenth-Century French Literature (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

118 Eighteenth-Century French Literature (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

119 Nineteenth-Century French Literature (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

120 Twentieth-Century French Literature (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

125 African Literature of French Expression (4). Introduction to the principal African and Caribbean works written in French. Offers opportunity to study literature and culture in French in a non-European context. Lectures and papers in French. Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

127 Francophone Literature and Culture (4). Literature and cultures of the francophone world. Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

139 Literature and Society (4). In English. Readings of masterpieces of French literature in their social, political, and historical contexts. Requires at least 4,000 words of assigned composition based on French works. Several essays required. French majors have admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor. **(VIII)**

140 Studies in French Literary Genre (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary.

150 Topics in French Literature and Culture (4). In English. May be repeated for credit as topics vary. **(VIII)**

160 French Cinema (4) F, W, S, Summer. In English. May have discussion sections in French. May be repeated when topic varies, but can be taken only twice for credit toward the major. Same as Film and Media Studies 160. **(VIII)**

170 History and Literature (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

171 Politics and Literature (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit as topics vary. **(VIII)**

180 Junior/Senior Seminar in Theory and Criticism (4). Prerequisite: French 101A or B or C recommended; may be taken concurrently with French 101A, B, C. May be repeated for credit once when topics vary.

185 Junior/Senior Seminar in French Literature and Culture (4). Required intensive writing course for French majors to explore in depth selected topic in French literature and culture. Students complete major independent research project on topic studied, making use of both literary and critical materials in their capstone essay. Taught in French. Prerequisites: four upper-division courses beyond French 100A, B; one of these courses may be taken concurrently with French 185.

199 Special Studies in French (1 to 4) F, W, S. Open only to outstanding students. Research paper required. Prerequisites: consent of instructor and of Department Chair; student must submit a written description of the proposed course to the instructor and the Chair prior to the beginning of classes. May be repeated for credit as topics vary.

GRADUATE

The content of these courses changes yearly, and courses numbered 200 and 216–399 (except 280) may be repeated for credit as topics vary.

In addition to the following courses, graduate students in French might find these Humanities courses of special interest: Humanities 200 (History and Theory); Humanities 220 (Literary Theory and Its History); and Humanities 270 (Advanced Critical Theory).

200 Selected Topics in French Linguistics (4)

216 Studies in Renaissance Literature (4)

217 Studies in Seventeenth-Century Literature (4)

218 Studies in Eighteenth-Century Literature (4)

219 Studies in Nineteenth-Century Literature (4)

220 Studies in Twentieth-Century Literature (4)

225 Francophone Literature and Culture (4). Studies in different francophone literatures and cultures (of Canada, the Caribbean, West and North Africa, and Southeast Asia).

231 Studies in Fiction (4)

232 Studies in Nonfictional Prose (4)

233 Studies in Poetry and Poetics (4)

240 Studies on a Major Writer (4)

250 Studies in Theory and Criticism (4)

254 History and Literature (4)

272 Cultural Studies (4)

280 Directed Study in French Literature (4) F, W. Restricted to graduate students taking the Master's examination the same quarter.

290 Research in French Language and Literature (4-4-4) F, W, S. A project proposal must be prepared by the student and approved by the faculty member who will direct the project. This proposal, with the faculty member's signature, must be given to the Chair for approval and will be put in the student's file. This procedure can be completed before or after registration or at the very latest must be completed by the end of the first week of classes. After the end of the first week no 290s can be approved. M.A. candidates may take this course once; Ph.D. candidates may take it twice.

299 Dissertation Research (4 to 12) F, W, S

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. May be repeated for credit.

Courses in Italian

***(Schedule of Classes* designation: Italian)**

LOWER-DIVISION

1A-B-C Fundamentals of Italian (5-5-5) F, W, S. Students are taught to conceptualize in Italian as they learn to understand, read, write, and speak. Classes are conducted entirely in Italian and meet daily. Language Laboratory attendance is required. Italian 1A-B-C and Italian S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Italian Fundamentals (7.5-7.5) Summer. First-year Italian in an intensified form. Students are taught to conceptualize in Italian as they learn to understand, read, write, and speak. Classes are conducted entirely in Italian and meet daily three hours for five weeks each session. Prerequisite: for S1BC: Italian S1AB with a grade of C or better, or Italian 1B or equivalent. Italian S1AB-BC and Italian 1A-B-C may not both be taken for credit. (S1BC: **VI**)

2A-B-C Intermediate Italian (4-4-4) F, W, S. Texts of contemporary literary or social interest provide the focus for more advanced conversation, reading, and composition. Classes are conducted entirely in Italian. Prerequisite for 2A: Italian 1C with a grade of C or better or S1BC with a grade of C or better or the equivalent, or placement into 2A; for 2B: Italian 2A with a grade of C or better or the equivalent, or placement into 2B; for 2C: Italian 2B with a grade of C or better, or placement into 2C. **(VIII)**

13 Italian Conversation (4) F, W, S. Helps students increase fluency and comprehension of spoken Italian. Includes an introduction to Italian culture. Taught in Italian. May be taken concurrently with Italian 2C. Prerequisite: Italian 2C or equivalent; or concurrent enrollment in Italian 2C.

99 Special Studies in Italian (4) F, W, S. Both student and instructor arrive at the theme of the course and the critical approach to be followed in consultation. Intended to offer courses in Italian otherwise unavailable. Prerequisites: consent of instructor and Department Chair; student must submit a written description of the course to the Chair prior to the first week of classes to obtain consent. May be repeated for credit when topic changes.

UPPER-DIVISION

101A, B Introduction to Italian Literature (4, 4). Introduction to all of the genres of a narrowly defined period in relationship to a specific literary problem. In Italian. Prerequisite: Italian 2C or equivalent; Italian 13 recommended. **(VIII)**

140A-B-C Readings in Medieval and Renaissance Literature (4-4-4). In English.

150 Topics in Italian Literature and Culture (4). Taught in English. May be repeated for credit as topics vary.

199 Tutorial in Italian Literature and Culture (4-4-4) F, W, S. The student must submit a written description of the proposed course to the instructor and the Chair prior to the beginning of the course. Prerequisites: consent of instructor and approval of the Department Chair.

DEPARTMENT OF GERMAN

243 Humanities Instructional Building; (949) 824-6406
E-mail: german@uci.edu
John H. Smith, **Department Chair**

Core Faculty

Anke S. Biendarra, Ph.D. University of Washington, *Assistant Professor of German* (twentieth- and twenty-first-century German literature and film, cultural studies)

Kai Evers, Ph.D. Duke University, *Assistant Professor of German* (twentieth-century German literature and film, modernism and Holocaust literature, theories of violence and catastrophic imagination)

Gail K. Hart, Ph.D. University of Virginia, *Professor of German* (eighteenth- and early-nineteenth-century German drama and fiction, Schiller, history of punishment)

Ruth Klüger, Ph.D. University of California, Berkeley, *Professor Emerita of German* (Kleist, nineteenth-century literature, Stifter, Holocaust literature)
Meredith Lee, Ph.D. Yale University, *Professor Emerita of German* (lyric poetry, eighteenth-century literature, Goethe, music and literature)
Herbert Lehnert, Ph.D. University of Kiel, *Research Professor of German* (modern German literature)
Glenn S. Levine, Ph.D. University of Texas, Austin, *Faculty Director of the Center for International Education, German Language Program Director, and Associate Professor of German* (applied linguistics, foreign language pedagogy, German-Jewish culture and literature, Yiddish language and culture, European culinary history and culture)
William J. Lillyman, Ph.D. Stanford University, *Research Professor of German* (Romanticism, Goethe, Tieck)
David T. Pan, Ph.D. Columbia University, *Associate Professor of German* (nineteenth- and early twentieth-century German literature and intellectual history)
Jens Rieckmann, Ph.D. Harvard University, *Professor Emeritus of German* (twentieth-century literature, fin-de-siècle Austria, Hofmannsthal, Thomas Mann)
Thomas P. Saine, Ph.D. Yale University, *Professor Emeritus of German* (eighteenth-century German literature, Enlightenment, French Revolution, Goethe)
John H. Smith, Ph.D. Princeton University, *Department Chair and Professor of German, and Professor of Comparative Literature* (eighteenth- and nineteenth-century literature and intellectual history, literary theory)

Affiliated Faculty

Edward Dimendberg, Ph.D. University of California, Santa Cruz, *Associate Professor of Film and Media Studies* (film history, audio-visual media and the built environment, contemporary architecture and urbanism, avant-garde cinema, modernism and modernity)
Alexander Gelley, Ph.D. Yale University, *Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel, critical theory)
Robert G. Moeller, Ph.D. University of California, Berkeley, *Department Chair and Professor of History* (modern Germany, European women)
Jane O. Newman, Ph.D. Princeton University, *Director of European Studies and Professor of Comparative Literature and English* (comparative Renaissance and Baroque studies, Walter Benjamin and the Baroque, history and theories of comparative literature, cultural studies and criticism, history and theories of rhetoric)
Annette Schlichter, Ph.D. Humboldt University of Berlin, *Associate Professor of Comparative Literature* (feminist theory and criticism, queer theory, contemporary American literature, gender and literature)
Gabriele Schwab, Ph.D. University of Konstanz, *UCI Chancellor's Professor of Comparative Literature and English* (contemporary comparative literatures, critical theory, psychoanalysis, literature and anthropology)
Martin Schwab, Ph.D. University of Bielefeld, *Director of the Minor in Humanities and Law and Professor of Philosophy and Comparative Literature* (philosophy and aesthetics)
Ulrike Strasser, Ph.D. University of Minnesota, *Associate Professor of History* (early modern continental Europe)

The Department of German pursues a program of German studies as part of the humanistic endeavor to understand and evaluate culture. Departmental courses are focused on language, literature, and film *in context,* that is, within the historical, social, intellectual, and political circumstances of their production and continuing reception. Clearly, we come to understand ourselves and our immediate culture much better through the study of different languages and cultural systems. Therefore, university language study is not merely a matter of memorizing vocabulary and practicing pronunciation. It is the serious investigation of a foreign linguistic system and the cultures which are defined by it. It is difficult—in fact, nearly impossible—for us to scrutinize and analyze something we know as intimately as our native language, and yet this is the order by which we formulate our thoughts and the order which may sometimes formulate our thoughts for us. The "foreignness" of a foreign language allows us to objectify an entire linguistic system, to observe its structure and its usage, and then to make comparisons with our own linguistic situation. This kind of knowledge of one's *native* language is the foundation of critical reflection on texts of any nature—historical, philosophical, literary, political, legal, journalistic, and others. Thus, serious study of a language other than English is absolutely crucial to a university education. The Department teaches its language courses with this principle in mind and seeks to provide its students with a framework for these linguistic and cultural comparisons.

Department literature and film courses offer a variety of critical perspectives from historical, social, or politically engaged readings to feminist and post-structuralist analysis. Topics range from studies of individual authors, periods, and genres to the history of German-language literature and film, the theory of criticism, and the relations of German-language literature to other literatures.

Undergraduate Program

The Department offers a major and a minor in German Studies. The major can be combined as a double major with any other UCI course of study; see an academic counselor for information.

All courses in the Department are taught in German to the extent compatible with the aim of the course. In the lower-division language courses students develop skills in speaking, listening, reading, and writing through an engaging, collaborative, task-based curriculum. The courses place a great deal of emphasis on meaningful cultural literacy in German, employing a diverse range of authentic texts and materials from the beginning, including avid use of Internet resources. During the second year (intermediate), students benefit from a curriculum based on authentic literary and cultural content (theater, media) and simulation of "real world" situations. These courses have the additional goal of contributing to students' education in the humanities and developing their skills in critical thinking.

After completion of the intermediate level, students enroll in the German 101–105 series, which emphasizes advanced reading, writing, and speaking skills while providing an introduction to a variety of German texts in literature, culture, film, and business. Courses in this series are taken in preparation for German 115, 117, 118, 119, 120, 130, which provide advanced instruction in periods ranging historically from the Reformation to the present and cover a variety of topics and approaches. A further series of courses (German 140, 150, 160, 170) is taught in English for both German Studies students and those who do not speak the language, and covers topics in German literature and culture, literary theory, linguistics, and criticism as well as German-language cinema.

Students are encouraged to participate in work- and study-abroad programs in German-speaking countries. The Department recommends the University's Education Abroad Program (EAP) in Göttingen, Germany. Göttingen is an old university city in central Germany, where EAP students complete an advanced language program and enroll in university courses with great success, usually achieving native or near-native fluency during this exciting year abroad. EAP also offers semester- and year-long programs in Berlin and Bayreuth. All EAP courses are accepted for UCI graduation credit and many contribute to fulfillment of the German Studies major and minor requirements.

German placement tests are recommended but not required for students who have successfully completed foreign language classes in high school or elsewhere. To obtain information about the German placement test, please contact the UCI Academic Testing Office at (949) 824-6207. Students with college-level course work should present their transcript to an academic counselor in the Humanities Undergraduate Study Office, 143 Humanities Instructional Building, or call (949) 824-5132 for assistance in determining which UCI course to take.

Apart from the optional placement test, students are placed in German language courses according to the number of years of previous study. In general, one year of high school German is considered equal to one quarter of a UCI German language course.

CAREERS FOR THE GERMAN STUDIES MAJOR

The ability to speak and write German can open up opportunities in communications, foreign trade and banking, transportation, government, science and technology, tourism, library services, and teaching. Because German plays such an important role in modern technology, employers in international law, business, the foreign service, the airline industry, journalism, professional translating, and all levels of education increasingly seek students with a knowledge of German. German is excellent preparation for professional schools. It can be combined successfully with work in the natural sciences, business and management, and the computer sciences, and it is invaluable for advanced work in the humanities and the arts.

Recent graduates of the German Department have begun careers in international law, business, the foreign service, the airline industry, journalism, and all levels of education, including university teaching.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN GERMAN STUDIES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Language Other Than English Placement and Progression: See page 253.

Departmental Requirements for the Major

A. Six courses selected from German 101, 102, 103, 104, 105, 115, 117, 118, 119, 120, 130.

B. Three courses selected from German 140, 150, 160, 170 (one of which is taken in satisfaction of the upper-division writing requirement).*

C. Three additional courses selected from German 140, 150, 160, 170, Linguistics 3, Comparative Literature, German history, German philosophy, or German political science, as approved by the advisor for the major.*

* German 140, 150, 160, 170 are variable topics courses and may be repeated for credit as topics vary.

Residence Requirements for the Major: At least six of the upper-division courses required for the major must be completed successfully at UCI. Other courses may be taken through the UC Education Abroad Program, providing course content is approved in advance by the Undergraduate Director of the German Department and the Humanities Office of Undergraduate Study.

Education Abroad Option: Up to a maximum of six upper-division courses taken during study abroad may be counted toward the major requirement. All such courses taken abroad must be approved by the Undergraduate Director of the Department of German, and students are advised to consult with the Undergraduate Director both before and after their stay abroad. Course approval typically involves the following: (1) presentation of syllabi and other pertinent course materials (term papers, exams, etc.) from the foreign host university, and (2) approval by the German Undergraduate Director and the Humanities Office of Undergraduate Study. In planning their undergraduate career, all students should keep in mind the Residence Requirement (see above), which stipulates that at least six upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

A. Four courses selected from German 101, 102, 103, 104, 105, 115, 117, 118, 119, 120, 130.

B. Three additional courses selected from German 101, 102, 103, 104, 105, 115, 117, 118, 119, 120, 130, 140, 150, 160, 170.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the German Undergraduate Director and the Humanities Office of Undergraduate Study.

Distinguished Visiting Professors

The Department's Distinguished Visiting Professors program brings students into direct contact with some of the outstanding scholars in the field of German Studies. Distinguished Visiting Professors typically visit for one quarter, during which they teach a graduate course and an undergraduate course and present a lecture to which students, faculty, and other members of the University community are invited. Program participants include Bengt Algot Sørenson (Odense), Uwe Ketelsen (Bochum), Peter Pütz (Bonn), Leslie Adelson (Ohio State), Hans Wysling (Zürich), Hans-Wolf Jäger (Bremen), Norbert Oellers (Bonn), Hans Rudolf Vaget (Smith College), Heinrich Detering (Göttingen), Wolfgang Martens (Munich), Anna Kuhn (UC Davis), Renate Möhrmann (Köln), Ülker Gökberk (Reed College), Stephanie Hammer (UC Riverside), Helmut Schneider (Bonn), Richard Gray (University of Washington), Ursula Mahlendorf (UC Santa Barbara), Sander Gilman (Emory University), Irmela von der Lühe (Freie Universität), Doris Bachmann-Medick (Freie Universität and Universität Göttingen), and Ann Marie Rasmussen, Duke University.

Graduate Program

In its graduate courses the Department stresses theoretical understanding of the nature of literature and culture. Seminars focus on German literary and cultural development after 1700. An emphasis in Critical Theory is available to graduate students in all departments of the School of Humanities. In addition, graduate students in German may choose to complete an emphasis in Comparative Literature, Feminist Studies, or Visual Studies.

The graduate program in German is essentially a Ph.D. program; however, the Department will consider admitting students who plan to pursue a terminal M.A. The M.A. requires a minimum of one year in academic residence, passing of the comprehensive examination, and must be completed in no more than two years of full-time graduate study. For those in the Ph.D. program, the Department will decide after completion of the M.A., at the latest, whether to permit the student to continue in the Ph.D. program or recommend discontinuation. In those cases where the student enters the UCI graduate program in German with an M.A. from another institution, the Department will evaluate the student's progress during the first year of study before deciding to recommend continuation or discontinuation.

For students who enter with normal academic preparation and pursue a full-time program of study, the normative time to degree for the Ph.D. is six years or less.

MASTER OF ARTS IN GERMAN

Before entering the program, a candidate is expected to have the equivalent of the Department of German's undergraduate major. Students with a bachelor's degree in another subject may be considered for admission. Normally their course of study will have to be extended in order to make up for the deficiency. However, each case is considered individually by the faculty. The minimum course

requirement for the M.A. degree is nine courses, eight of which must be taken within the Department of German. Reading knowledge of a foreign language other than German also is required for the M.A. degree. Whenever possible, a candidate is urged to complete this requirement before entering the program. Further requirements follow.

Students entering with a B.A. must complete their requirements for the M.A. by the end of the second year of study (six quarters) at the latest.

The Preparation of a Reading List. All candidates should prepare as early as possible a list of works read in the field of German literature, both primary texts and critical works. This list should preferably be augmented by critical texts and by works from other literatures which, in the candidate's opinion, relate to the German works on the list. Since it should ultimately contain representative selections from various eras of German literature and some works of criticism, a tentative list must be discussed with the graduate advisor before the end of the fall quarter of the year in which the candidate expects to receive the M.A. Candidates should indicate on the list a number of works with which they are especially familiar. In its final form (including works read during the course of study both in and out of class) the list will be submitted together with the master's essay two weeks before the oral examination. It is the student's responsibility to keep the reading list current.

M.A. Comprehensive Examination (consists of two parts):

1. **The Master's Essay.** The purpose of the written part of the M.A. comprehensive examination is to show the candidate's methodological progress in interpreting German literature. It consists of an essay in which a text is elucidated and related to (a) pertinent works by the same author, (b) its social and historical context, and (c) other works of German or other literatures with which the candidate is familiar. The level of the discussion will normally be enhanced by the candidate's knowledge of the relevant secondary literature. The topic of the essay should be tentatively formulated and reported to the graduate advisor before the end of the second quarter of the student's residence.
2. **The Oral Examination.** During the oral examination the following items will be discussed: (a) the essay, and (b) the reading list. The discussion based on the reading list will focus on works which the student knows well, but may broaden into other areas.

One Year of Residence.

DOCTOR OF PHILOSOPHY IN GERMAN

The Department requires a minimum of 22 approved courses from students entering with a bachelor's degree. These may include courses in philosophy, history, comparative literature, and others suitable for the individual student's program of study. The student also will participate in each of the German Department's colloquia. The student will augment the reading list and keep it current during the whole course of study. At least two years of residence are required.

Students entering with the master's degree will be advised individually as to remaining course requirements.

Since the majority of Ph.D. candidates choose careers as teachers, the German Department recognizes its obligation to offer them preparatory experience. Therefore, all candidates for the Ph.D. are required to teach under the supervision of a faculty member at least one course in each of three quarters (for which they will receive credit as German 399). Three of these courses may be counted toward the 22 courses required for the Ph.D.

Faculty Mentors. Each graduate student will be assigned a faculty mentor to consult at least once each quarter about progress, the program, academic questions, or any other issues pertaining to the student's graduate career. A student may change mentors for any reason (indeed, without giving a reason) at any time after meeting with either the graduate advisor or chair.

First-Year Review. Students ending their first year of study at UCI must undergo a more comprehensive review procedure. This applies to students entering with either a B.A. or an M.A. After the review, students will be apprised of the departmental evaluation and advised on a future course of study or recommended for discontinuation of the program.

Annual Review. All students will undergo an annual review by the faculty of the Department. Each spring the faculty will meet to discuss students' progress in the program. Annual review and evaluation of student performance and progress assure both the student and the Department that each student is meeting the academic standards, teaching standards (for teaching assistants and associates, readers, and "ABD" lecturers), and professional standards of conduct expected of graduate students in the program. The review process provides an opportunity to assess and make recommendations regarding any deficiencies in student performance and progress. The following factors will be considered in determining graduate student performance and progress: grade point average, time to degree, foreign language requirement, and teaching performance.

Grade Point Average. All graduate students in German, including those in both the master's program and the doctoral program, are expected to maintain a 3.3 GPA. A GPA below 3.3 in any quarter falls below the academic standard expected by the Department. Pursuant to the terms of appointment, a student whose GPA falls below 3.3 in any given quarter and whose cumulative GPA is not 3.3 by the end of the academic year may be ineligible for funding, and faculty may recommend the student be disqualified from the program.

Foreign Language Requirements. Students must demonstrate reading knowledge of two languages or extensive competence in one language other than German and English. Choice of language(s) depends on the student's area of specialization. Students are expected to demonstrate satisfactory progress. Progress is normally demonstrated by passing language examinations administered by a member of the faculty (in the German Department or other language department) versed in the language, or by registering for and passing language courses equivalent to the intermediate level (as approved by the graduate advisor). Full-time students must demonstrate near-native speaking abilities in German and English. Students with significant deficiencies in language competency that will adversely affect their academic progress normally will not be admitted to doctoral candidacy. Students in the doctoral program will meet language requirements on a schedule established by their doctoral committees, but in all cases the requirements must be met prior to taking the Ph.D. qualifying examination. If these requirements are not met in a timely manner, faculty may recommend disqualification from the program.

Qualifying Examination. In order to advance to candidacy, the student must take and pass a qualifying examination. At least two months prior to the planned date of the exam, students must submit a comprehensive reading list, prepared in consultation with their committee chair, to the examination committee. The committee may make emendations to the list. On the basis of that list, students must design four courses. One course should be designed as an Introduction to German Literature and Culture. The other three courses, drafted in consultation with the student's committee chair, are graduate seminars and must ensure breadth and depth of coverage of German literature and culture. They may be organized around topics, genres, authors, or periods. At least one of these courses must comprise the student's intended area of dissertation

research. The four courses must be clearly distinct and have minimal overlap. These courses must include reading lists of required and optional texts, main secondary literature, a written justification/course description, and a basic syllabus (for a thirteen-week semester course). No more than one course may be a modification of a seminar taken in the Department. These courses must be submitted to the committee members at least two weeks prior to an oral examination date. The oral exam will be a three-hour exploration of the reading list, focusing on the courses. Upon successful completion of the qualifying examination, the candidate will have advanced to Ph.D. candidacy.

Dissertation Prospectus. Students must submit a dissertation prospectus to their advisor and, following approval by the advisor, circulate it to the entire committee. There will be a two-hour oral defense of the prospectus before the committee. It is expected that the prospectus be submitted two quarters after completion of the qualifying examination or within one year at the latest.

Dissertation Chapter Review. Students must submit a substantial piece of writing (approximately 45 pages) from their dissertation ordinarily in the form of a chapter and a comprehensive bibliography. In consultation with their dissertation committee chair, they schedule a date and time for the oral review with the committee, which lasts approximately two–three hours. Prior to the oral review the student will make a public presentation, open to the UCI community and guests, in the form of a lecture with questions and answers.

Doctoral Colloquium. Students who have advanced to candidacy and are in residence must attend a colloquium for doctoral candidates. The colloquium will be held at least two times per quarter. Students will be expected to present sections of their prospectus or dissertation.

Dissertation Defense. The oral defense of the dissertation focuses on the adequacy of the student's research and thesis.

Two Years of Residence.

Normative Time to Degree and Expected Programs of Study

For students entering with a B.A.:
Year 1: Course work
Year 2: Course work; M.A. completed
Year 3: Course work; Qualifying Examination (latest, fall of year four); advance to candidacy
Year 4: Dissertation prospectus and defense
Year 5: Dissertation chapter review and public presentation
Year 6: Completion of dissertation; defense

For students entering with an M.A.:
Year 1: Course work
Year 2: Course work; Qualifying Examination (latest, fall of year three); advance to candidacy
Year 3: Dissertation prospectus and defense
Year 4: Dissertation chapter review and public presentation
Year 5: Completion of dissertation; defense

Courses in German

(Schedule of Classes **designation: German)**

LOWER-DIVISION

1A-B-C Fundamentals of German (5-5-5) F, W, S. Emphasizes the development of meaningful communicative skills in German for the purposes of interaction with German speakers and beginning study of German. With a learner-centered approach, the courses help students develop speaking, listening, reading, writing, and cultural skills and knowledge. Prerequisite for 1A: none; for 1B: German 1A with a grade of C or better, one to two years of high school German, or equivalent; for 1C: German 1B or S1AB with a grade of C or better, two to three years of high school German, or equivalent. German 1A-B-C and S1AB-BC may not both be taken for credit. (1C: **VI**)

S1AB-BC Fundamentals of German (7.5-7.5) Summer. First-year German in a time-intensive form. Equivalent to German 1A-B-C during the academic year. For description, see German 1A-B-C. Prerequisite for S1AB: none; for S1BC: German S1AB or 1B with a grade of C or better, or equivalent. German S1AB-BC and 1A-B-C may not both be taken for credit. (S1BC: **VI**)

2A-B-C Intermediate German (4-4-4) F, W, S. Emphasizes the development of meaningful communicative skills in German for the purposes of interaction with German speakers and intermediate study of German. With a learner-centered approach, the courses help students develop reading, writing, speaking, listening, grammatical, and cultural skills and knowledge. First-year grammar is reviewed and expanded. Prerequisite for 2A: German 1C or S1BC with a grade of C or better, three to four years of high school German, or equivalent; for 2B: German 2A with a grade of C or better, or equivalent; for 2C: German 2B or S2AB with a grade of C or better, or equivalent. German 2A-B-C and S2AB-BC may not both be taken for credit. **(VIII)**

S2AB-BC Intermediate German (6-6) Summer. Second-year German in a time-intensive form. Equivalent to German 2A-B-C during the academic year. For description see German 2A-B-C. Prerequisite for S2AB: German S1BC or 1C, three to four years of high school German, or equivalent; for S2BC: German 2B or S2AB with a grade of C or better, or equivalent. German S2AB-BC and German 2A-B-C may not both be taken for credit. **(VIII)**

50 Science, Society, and Mind (4) F, W, S. Historical, philosophical, and literary reflections by German writers on the rise of the modern sciences. In English. Designed primarily for nonmajors. May be taken three times for credit as topics vary. **(IV, VIII)**

53 Advanced Conversation (2) S. Includes reading of political and cultural material. Conducted in German. May be repeated for credit. Prerequisite or corequisite: German 2C or consent of instructor.

97 Fundamentals of German (with Emphasis on Reading) (4) F, W, S. Designed primarily for students interested in acquiring a solid reading knowledge of German, and to facilitate the understanding and translating of German texts dealing with a variety of disciplines. Not open to German majors or minors. Does not serve as prerequisite for any higher-level German courses or fulfill any undergraduate foreign language requirement. May be taken for credit three times.

99 Special Studies German (1 to 5) F, W, S. Consultation with instructor necessary prior to enrollment. Prerequisite: consent of instructor.

UPPER-DIVISION

NOTE: Upper-division courses normally are taught in German. Exceptions are German 140, 150, 160, and 170.

101 Introduction to German Literature and Culture (4) F. Sample interpretations of texts in their cultural and historical contexts. Introduction to critical language in German. Prerequisite: German 2C with a grade of C or better or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

102 German Culture and Society (4). Interdisciplinary introduction to German culture from the perspective of its aesthetic, social, and political aspects. Methodological problems arising from an analysis of culture in its historical context. Prerequisite: German 2C with a grade of C or better or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

103 German Film (4). Introduction to the history and interpretation of German film within its cultural and social contexts. Enhances German grammar knowledge and vocabulary and develops sophisticated speaking, writing, and reading skills. Prerequisite: German 2C with a grade of C or better or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

104 Introduction to Germanic Linguistics (4). Introduces German or other Germanic-language linguistic, sociolinguistic, or ethnography-of-communication topics. Taught in German. Prerequisite: German 2C with a grade of C or better, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

105 German for Business and Economics (4). Explores the structure of the German economy and business practices while developing verbal and written skills important for professional life in Germany. Taught in German. Prerequisite: German 2C with a grade of C or better or equivalent, or consent of instructor. **(VIII)**

115 Advanced German for Business and Economics (4). Explores the structure of the German economy and business practices while developing advanced verbal and written skills important for professional life in Germany. Taught in German. Prerequisite: German 105 or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

117 Topics in German Literature and Culture 750–1750 (4). Specific course content determined by individual faculty members. Example: Luther and the European Renaissance. Prerequisite: at least one course selected from German 101, 102, 103, or 104 or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

118 Studies in the Age of Goethe (4). Individual authors such as Lessing, Goethe, Schiller, Kleist, and Hölderlin, or the drama of the "angry young men" of the German 1770s. Prerequisite: at least one course selected from German 101, 102, 103, or 104 or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

119 Studies in Nineteenth-Century German Literature and Culture (4). Individual authors such as Büchner, Grillparzer, Keller, and Nietzsche, or broader social-literary phenomena: Prerequisite: at least one course selected from German 101, 102, 103, or 104 or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

120 Studies in Twentieth-Century German Literature and Culture (4). Individual authors such as Thomas Mann, Brecht, and Kafka, or topics addressing questions of genre and/or social-literary problems. Prerequisite: at least one course selected from German 101, 102, 103, or 104 or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

130 Topics in German Literature and Culture (4). Literary and cultural topics not fully contained within the periods listed above, such as "German Comedy" and "Turn-of-the-Century Vienna." Prerequisite: at least one course selected from German 101, 102, 103, or 104 or equivalent, or consent of instructor. May be repeated for credit as topics vary. **(VIII)**

140 Topics in Literary Theory and Criticism (4). In English. Theoretical dimensions of literary criticism and the German philosophical tradition. Topics such as Marxism, Freudian thought, the German Idealistic tradition of aesthetics, Historicism, twentieth-century hermeneutics, Frankfurt School, and *Rezeptionsaesthetik* are explored in a selection of theoretical, critical, and literary texts. Prerequisites when offered as an upper-division writing course: upper-division standing and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VIII)**

150 German Literature and Culture in Translation (4). In English. Major works in Germanic literature and culture in context. Prerequisites when offered as an upper-division writing course: upper-division standing and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VIII)**

160 German Cinema (4). Historical, theoretical, and comparative perspectives on German cinema. Same as Film and Media Studies 160 when topic is appropriate. Prerequisites when offered as an upper-division writing course: upper-division standing and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VIII)**

170 Topics in German Linguistics (4). Explores linguistic, sociolinguistic, or ethnography-of-communication topics of German or other Germanic languages (Swedish, Icelandic, Yiddish, and others). Taught in English. Prerequisites when offered as an upper-division writing course: upper-division standing and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VIII)**

199 Individual Study (1 to 4) F, W, S. May be repeated for credit as topics vary.

GRADUATE

All graduate courses offered in the Department fall under the generic titles German 200, 210, 220, and 230. Course titles and contents change according to the instructor teaching them; courses offered under these numbers may be repeated for credit provided the content has changed. Complete course descriptions are available quarterly from the Department at http://www.humanities.uci.edu/german/courses. Course offerings for the entire School of Humanities are available at http://www.humanities.uci.edu/graduate/courses/index.php.

200 Literary Criticism (4)

210 Literary Theory (4)

220 Selected Topics in German Linguistics (4)

230 Literary and Cultural History (4)

290 Independent Study (4). Counted toward course requirements for the M.A. or Ph.D. A term paper or project is required. Letter grade only. May be repeated for credit.

298 Independent Directed Reading (4 to 12). For students preparing for doctoral examination. Satisfactory/Unsatisfactory only.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory only.

398A-B The Teaching of German (2-2) F, W. Required of all Teaching Assistants in the German Department. Also open to present and prospective teachers of German who are not Teaching Assistants.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

UNDERGRADUATE PROGRAM IN GLOBAL CULTURES

152 Humanities Instructional Building; (949) 824-9290
E-mail: globalcultures@uci.edu
Armin Schwegler, **Director**

Core Faculty

Sharon B. Block, *Department of History*
James Fujii, *Departments of East Asian Languages and Literatures and of Comparative Literature*
David Theo Goldberg, *Departments of Comparative Literature and of Criminology, Law and Society*
Douglas M. Haynes, *Department of History*
Laura H. Y. Kang, *Departments of Women's Studies and Comparative Literature*
Ketu H. Katrak, *Department of Comparative Literature*
Rodrigo Lazo, *Department of English*
Keith L. Nelson, *Department of History*
Jane O. Newman, *Department of Comparative Literature*
Rachel O'Toole, *Department of History*
Mark S. Poster, *Departments of Film and Media Studies and of History*
Brook Thomas, *Department of English*
Armin Schwegler, *Department of Spanish and Portuguese*
Jacobo Sefamí, *Department of Spanish and Portuguese*
Bert Winther-Tamaki, *Department of Art History*

Undergraduate Program

Global Cultures is an innovative undergraduate major (and minor) in the School of Humanities with an exciting mission: to explore the problems and processes of globalization from a humanistic perspective. The major provides students with twenty-first-century analytical skills and knowledge that is critical to understanding the complexities of the diverse world in which we live. In the process, Global Cultures equips students with the knowledge and tools that lead to successful careers in a wide range of professions and fields.

Global Cultures faculty offer high-quality lectures and, in advanced courses, interactive small group seminars. The major favors a multidisciplinary approach that draws on multiple departments and programs, housed in both the Humanities (including Art History, English, Film and Media Studies, History, Philosophy, Religious Studies, Spanish and Portuguese, and many more) and the Social Sciences (Anthropology, Chicano/Latino Studies, Political Science, Sociology, among others).

Up-to-date examples of the highly diverse courses taught in the major may be found at http://www.humanities.uci.edu/global_cultures/courses.quarterly.php. The curricular offerings of Global

Cultures are extraordinarily broad. With this intellectually stimulating learning environment, the major attracts students from a wide range of backgrounds. Global Cultures faculty provide these students with a critical understanding and a strong foundation for practice in a variety of occupations, both domestic and international.

The major requires a total of 14 courses. Six of these courses are specific, and eight are electives (see below). Students are encouraged to augment their foreign language competence beyond the School minimum. Participation in the UC Education Abroad Program is strongly recommended for all Global Cultures majors.

Students majoring or minoring in Global Cultures must choose a primary emphasis (six courses) and a secondary emphasis (two courses) from the list below. Each emphasis essentially consists of a geographic focus. Students may also design their own emphasis in consultation with a program advisor and with the approval of the Global Cultures Committee. All emphases are chosen in consultation with a faculty advisor and/or the approval of the Global Cultures Committee. Examples of how current students are combining their primary and secondary emphases are available at http://www.humanities.uci.edu/global_cultures/about/emph.php.

EMPHASES

Hispanic, U.S. Latino/Latina, and Luso-Brazilian Cultures: Examines the historical, political, and cultural formations of regions where Spanish and Portuguese are spoken, including Spain, Portugal, Spanish- and Portuguese-speaking countries in the Western Hemisphere, and the Latino/Latina population in the United States.

Africa (Nation, Culture) and its Diaspora: Examines Africa as a diverse geographical and political expression, including its historical, political, and cultural formation locally, regionally, and globally.

Asia (Nation, Culture) and its Diaspora: Examines Asia as a diverse geographical and political expression, including its historical and cultural formation locally, regionally, and globally.

Europe and its Former Colonies: Examines Europe and its former colonies as a diverse geographical and political expression, including its historical and cultural formation locally, regionally, and globally.

Atlantic Rim: Explores the movement of people and cultures in relationship to the historical and contemporary experience of societies that are adjacent to the Atlantic Ocean, including, among others, west Africa, the Americas, the Caribbean, and western and northern Europe, as well as the British archipelago.

Pacific Rim: Explores the movement of people and cultures in relationship to the historical and contemporary experience of societies that are adjacent to the Pacific Ocean, including, among others, India, China, Japan, Korea, Vietnam, the United States, Central and South America, and Malaysia.

Inter-Area Studies: Includes comparative studies of the geographical regions outlined in the above six emphases, for instance, the analysis of Africans in Asia, or the cultural, historical, and political connections between the Atlantic and the Pacific Rim.

Students may also design their own emphasis by combining two or more regional emphases in a non-traditional fashion. For instance, a student may wish to study what is known as "Creole" (oral) literatures, found in multiple locations in Africa, Asia, and the Americas.

STUDY ABROAD OPTION

Students are encouraged to study abroad, and may be able to satisfy a significant portion of their major requirements abroad. For maximum number of courses allowed and other pertinent details, see http://www.humanities.uci.edu/global_cultures/.

All courses taken abroad must be approved. Course approval typically involves the following: (1) presentation of syllabi and other pertinent course materials (term papers, exams, etc.) from the foreign host university, and (2) submission of a UCI Humanities Petition form (available online, and to be completed after student's return to UCI) to the Undergraduate Director of the Program in Global Cultures, and to the Office of Undergraduate Study. Students are advised to consult with the Office of Humanities Undergraduate Study (HIB 143) and the Global Cultures Director both before and after their stay abroad. NOTE: See also the residence requirement below.

CAREER OPPORTUNITIES

The major prepares students particularly well for careers in all fields in which analysis, judgment, argument, and a wide (global) rather than narrow perspective are important. The Global Cultures major equips students with a knowledge that is critical to understanding the complexities of the diverse world in which we live.

The following careers are especially well suited for Global Cultures majors: business (national as well as international), law, management, education (primary and secondary teaching), politics, public policy, academia, print media, television, foreign service, tourism, travel industry, and graduate studies in a wide variety of fields (business, law, education, public policy, and others).

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN GLOBAL CULTURES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Requirements for the Major

A. History 21A, 21B, 21C.

B. Global Cultures 103A-B.

C. Global Cultures 191.

D. Seven upper-division courses, five of which must focus on one emphasis and two on a second emphasis chosen from the approved course lists at http://www.humanities.uci.edu/global_cultures. Quarterly consultation with a faculty advisor is also required.

E. One additional upper- or lower-division course which must focus on the primary or secondary emphasis chosen from the approved course lists at http://humanities.uci.edu/global_cultures.

Students are encouraged to augment their language other than English competence beyond the School minimum. Participation in the UC Education Abroad Program is strongly recommended for all Global Cultures majors.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI. By petition, two of the five may be taken through the UC Education Abroad Program, provided that course content is approved—usually in advance—by the Director of the Global Cultures Program.

Requirements for the Minor

A. Two courses from History 21A, 21B, 21C.

B. Global Cultures 103A-B.

C. Three upper-division courses from one emphasis.

D. One upper-division course from a second emphasis.

Residence Requirement for the Minor: A minimum of four upper-division courses required for the minor must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Emphases and Approved Courses: The following list includes a few examples of courses that have been approved for each emphasis. The complete list is extensive and varies from quarter to quarter, depending upon course scheduling. For complete up-to-date information on approved courses, consult the Global Cultures Web site at http://www.humanities.uci.edu/global_cultures.

Hispanic, U.S. Latino/Latina, and Luso-Brazilian Cultures:
Sample courses: Chicana/Chicano History: Twentieth Century (History 151B), Introduction to Portuguese and Brazilian Literature (Portuguese 120B).

Africa (Nation, Culture) and its Diaspora:
Sample courses: African American Art: 1930–Present (Art History 164B), The African American Civil Rights Movement (History 142B).

Asia (Nation, Culture) and its Diaspora:
Sample courses: Japanese Art: 1868–1945 (Art History 162B), Asian Americans and Education in a Multicultural Society (Asian American Studies 150).

Europe and its Former Colonies:
Sample courses: European Art: 1851–1907 (Art History 134C), Classics and History: The Ancient World (Classics 140), The Holocaust (History 190).

Atlantic Rim:
Sample courses: The Black Protest Tradition (African American Studies 162), American Art: 1800–1900 (Art History 165B), Black Britain (History 190).

Pacific Rim:
Sample courses: Asian American History (Asian American Studies 111), Cultural Studies in East Asia (East Asian Languages and Literatures 155).

Inter-Area Studies:
Sample courses: Nationalism and Ethnicity in the Contemporary World (Anthropology 136A), Film and Media Theory (Film and Media Studies 110), Gender, Feminism, and Anthropology (Women's Studies 180).

Courses in Global Cultures

***(Schedule of Classes* designation: GlblClt)**

103A-B Global Cultures I, II (4-4). Introduction to the processes by which economies, cultural practices, national entities, groups, individuals, and personal identities have undergone globalization. **103A:** General background and methodological tools for understanding problems and processes of globalization. May be repeated for credit as topics vary. **103B:** Explores how globalization has manifested itself in specific topics, periods, or societies. May be repeated for credit as topics vary. **(VIII)**

191 Global Cultures Senior Seminar (4). Students explore a topic(s) concerning the processes and/or problems of globalization from an interdisciplinary perspective and build on their critical and analytical skills when investigating cultural and other phenomena that cut across national borders. Research assignments, class presentations, final seminar paper. Prerequisites: Global Cultures 103A-B; upper-division standing or consent of instructor. May be repeated for credit as topics vary.

199 Independent Study (1 to 4). Directed reading and research in consultation with a faculty advisor. Substantial written work required. May be repeated for credit as topics vary.

DEPARTMENT OF HISTORY

200 Murray Krieger Hall; (949) 824-6521
Robert G. Moeller, **Department Chair**

Faculty

Marc Baer, Ph.D. University of Chicago, *Associate Professor of History* (Ottoman and Islamic history, Middle East history, and history of religion)

Sharon B. Block, Ph.D. Princeton University, *Associate Professor of History* (early American, feminist theory and gender studies)

Carolyn P. Boyd, Ph.D. University of Washington, *Professor of History* (Europe, Spain)

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor Emeritus of History* (American culture, African American history)

Vinayak Chaturvedi, Ph.D. University of Cambridge, *Associate Professor of History* (South Asia, social and intellectual history)

Yong Chen, Ph.D. Cornell University, *Associate Professor of History* (Asian American history)

Touraj Daryaee, Ph.D. University of California, Los Angeles, *Associate Director, Dr. Samuel M. Jordan Center for Persian Studies and Culture, Associate Professor of History, and Howard Baskerville Professor in the History of Iran and the Persianate World* (ancient and medieval Iranian history, Iranian languages and literature, Zoroastrianism)

Alice Fahs, Ph.D. New York University, *Director of the Humanities Honors Program and Associate Professor of History* (U.S. intellectual/cultural history)

Sarah Farmer, Ph.D. University of California, Berkeley, *Associate Professor of History* (twentieth-century European cultural)

Richard I. Frank, Ph.D. University of California, Berkeley, *Professor Emeritus of History and Classics* (Roman empire, Classics)

James B. Given, Ph.D. Stanford University, *Professor of History* (medieval Europe)

Qitao Guo, Ph.D. University of California, Berkeley, *Associate Professor of History* (Late Imperial China, social and cultural)

Douglas M. Haynes, Ph.D. University of California, Berkeley, *Director of the ADVANCE Program for Faculty Equity and Diversity and Associate Professor of History* (social and cultural history of modern Britain, social history of modern medicine)

Lamar M. Hill, Ph.D. University of London, *Professor Emeritus of History* (Tudor-Stuart Britain)

Robert V. Hine, Ph.D. Yale University, *Professor Emeritus of History* (intellectual history of the American West)

Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Professor Emeritus of History* (social history of science)

David Igler, Ph.D. University of California, Berkeley, *Associate Professor of History* (U.S. environmental, American West, Pacific)

Jon S. Jacobson, Ph.D. University of California, Berkeley, *Professor Emeritus of History* (European international)

Winston James, Ph.D. London School of Economics and Political Science, University of London, *Professor of History* (Caribbean, African American, and African diaspora)

Michael P. Johnson, Ph.D. Stanford University, *Professor Emeritus of History* (American social and political)

Mark A. LeVine, Ph.D. New York University, *Professor of History* (modern Middle Eastern history, Islamic studies, histories of empire and globalization)

Lynn Mally, Ph.D. University of California, Berkeley, *Professor of History* (modern Russian and Soviet)

Samuel C. McCulloch, Ph.D. University of California, Los Angeles, *Professor Emeritus of History* (British empire and commonwealth)

Nancy A. McLoughlin, Ph.D. University of California, Santa Barbara, *Assistant Professor of History* (medieval Europe)

Jessica Millward, Ph.D. University of California, Los Angeles, *Assistant Professor of History* (U.S., African American gender and women)

Laura Mitchell, Ph.D. University of California, Los Angeles, *Director of History Graduate Studies and Associate Professor of History* (sub-saharan Africa, colonial southern Africa, environmental history, transregional networks of exchange)

Robert G. Moeller, Ph.D. University of California, Berkeley, *Department Chair and Professor of History* (modern Germany, European women)

Keith L. Nelson, Ph.D. University of California, Berkeley, *Professor Emeritus of History* (American foreign relations)
Spencer C. Olin, Ph.D. Claremont Graduate School, *Professor Emeritus of History* (American social and political)
Rachel O'Toole, Ph.D. University of North Carolina, Chapel Hill, *Assistant Professor of History* (Latin America; ancient, colonial, national, and contemporary)
Kenneth L. Pomeranz, Ph.D. Yale University, *UCI Chancellor's Professor of History* (modern Chinese)
Mark S. Poster, Ph.D. New York University, *Professor Emeritus of Film and Media Studies and of History* (modern European intellectual)
Ana Rosas, Ph.D. University of Southern California, *Assistant Professor of History and Chicano/Latino Studies* (Chicana/Chicano history; comparative immigration and ethnic history; gender studies; oral history)
Jaime E. Rodríguez, Ph.D. University of Texas, *Professor of History* (Latin America, Mexico)
Emily S. Rosenberg, Ph.D. State University of New York, Stonybrook, *Professor of History* (U.S. international relations, U.S. and the world, gender and international relations)
Vicki L. Ruiz, Ph.D. Stanford University, *Dean of the School of Humanities and Professor of History and Chicano/Latino Studies* (women, Chicano/Chicana labor)
Sharon V. Salinger, Ph.D. University of California, Los Angeles, *Dean of the Division of Undergraduate Education and Professor of History*
Patricia Seed, Ph.D. University of Wisconsin, Madison, *Professor of History* (world history, cartography)
Thomas Sizgorich, Ph.D. University of California, Santa Barbara, *Assistant Professor of History* (late antiquity)
Ulrike Strasser, Ph.D. University of Minnesota, *Associate Professor of History* (early modern continental Europe)
Timothy Tackett, Ph.D. Stanford University, *Professor of History* (Old Regime Europe, French Revolution)
Heidi Tinsman, Ph.D. Yale University, *Associate Professor of History* (Latin America)
Steven C. Topik, Ph.D. University of Texas, *Professor of History* (Latin America)
Anne Walthall, Ph.D. University of Chicago, Co-*Director of the Minor in Asian Studies and Professor of History and of East Asian Languages and Literatures* (early modern and modern Japan)
Jeffrey Wasserstrom, Ph.D. University of California, Berkeley, *Professor of History* (modern China, student movements and comparative revolutions)
Jonathan M. Wiener, Ph.D. Harvard University, *Professor of History* (recent American, theory and history)

Affiliated Faculty

Edwin Amenta, Ph.D. University of Chicago, *Professor of Sociology*
Simon A. Cole, Ph.D. Cornell University, *Department Chair and Associate Professor of Criminology, Law and Society*
Catherine Fisk, J.D. University of California, Berkeley; LL.M. University of Wisconsin at Madison, *UCI Chancellor's Professor of Law* (labor and employment law, civil rights)
Dorothy Fujita-Rony, Ph.D. Yale University, *Associate Professor of Asian American Studies* (U.S. history, Asian American studies)
Kavita Philip, Ph.D. Cornell University, *Associate Professor of Women's Studies* (science and technology studies, South Asian studies, political ecology, critical studies of race, gender, colonialism, new media, and globalization)
Christopher Tomlins, Ph.D. Johns Hopkins University, *UCI Chancelor's Professor of Law* (American legal history, law and Society, and law and humanities)

Undergraduate Program

The undergraduate program in History is designed to develop critical intelligence and to foster an awareness of ourselves and our world through the study of the past. The Department presents a variety of approaches to history, and each emphasizes basic disciplinary skills: weighing evidence, constructing logical arguments, and exploring the role of theory in historical analysis and human action.

The Department offers a number of lower-division courses open to nonmajors as well as majors, most of which fulfill part of the UCI general education requirement. The Department requires all majors to take an introductory course in three of six regional histories—United States history, European history, Latin American history, Transregional history, Asian history, or Middle East and African history. These courses are also open to nonmajors.

Students who are interested in the study of history but are majoring in other disciplines may minor in History. The minor incorporates elements of the Department's program for majors but allows students enough flexibility to pursue programs in other departments and schools.

Upper-division courses range from the examination of individual nation-states (e.g., Chinese history), to studies of the relations among nation-states (e.g., Emergence of the Modern Middle East), to historical analyses of political, socio-economic, and cultural factors (e.g., Women in the United States). Students are also provided the opportunity for small-group learning experiences in a series of colloquia in social history, political history, international history, intellectual history, social thought, and comparative history. The colloquia are conducted as discussion groups and involve close reading and analysis of secondary texts. The research seminar is a one-quarter seminar in primary materials that culminates in the writing of a research paper. In addition, students have the option of pursuing a full-scale research project with a faculty advisor after completing the research seminar.

The faculty strongly encourages History majors and minors to take advantage of the University's study abroad programs and to experience a different culture for a quarter or longer while making progress toward their UCI degree. Moreover, students who are interested in the history of a particular country or region should seriously consider participation in University of California programs within that country or area. UCI's Center for International Education, which includes both the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of the many worldwide opportunities. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

CAREERS FOR THE HISTORY MAJOR

The training and discipline derived from historical studies provide a valuable experience for all educated persons seeking to understand themselves and their world. Many students who complete undergraduate degrees in the Department of History go on to graduate school in a variety of fields, including history, law, business, international relations, and teacher education. Students interested in teaching history at the intermediate and high school levels should consult with the Department of History, the School of Humanities Undergraduate Counseling Office, or the Department of Education.

The study of history is valuable preparation for many other careers as well. The strong academic and professional orientation acquired by History majors is necessary to pursue successful careers in such diverse fields as advertising, banking, journalism, management, public relations, publishing, and government service.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN HISTORY

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the Major

Thirteen courses are required:

A. Three courses from History 70A, B, C, D, E, F, chosen from three different regions (Problems in History 70A Asia, 70B Europe, 70C United States, 70D Latin America, 70E Middle East and Africa, 70F Transregional History).

B. Three upper-division History courses with a regional or thematic focus decided upon in consultation with a faculty advisor, at least one of which is devoted to the period prior to 1800.

C. Two additional upper-division History courses outside the regional or thematic focus area.

D. History 100, taken to satisfy upper-division writing, and History 190. (Students have the option of pursuing a full-scale research project in History 192 in consultation with a faculty advisor. History 192 can only be taken after completing History 190).

E. Three additional lower- or upper-division History courses.

Residence Requirement for the Major: One course from the History 70 series, History 100, History 190, and three upper-division History courses must be completed successfully at UCI. By petition, two of the six may be taken through the UC Education Abroad Program, provided that course content is approved in advance by the Chair of the History Undergraduate Program Committee.

Departmental Requirements for the Minor

Seven courses are required:

A. A year-long survey in world history (History 21A, 21B, 21C), United States history (History 40A, 40B, 40C), or three courses from History 70A, B, C, D, E, F, chosen from three different regions (Problems in History 70A Asia, 70B Europe, 70C United States, 70D Latin America, 70E Middle East and Africa, 70F Transregional History).

B. Four upper-division History courses.

Residence Requirement for the Minor: Students who select the History 70 series must complete at least one 70 series course at UCI. At least four upper-division History courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the Chair of the Undergraduate Program Committee.

Graduate Program

The M.A. and Ph.D. degree programs in History are designed to provide students with both advanced historical skills and a rigorous grounding in historical theory. This combination of theoretical study with training in historical method reflects the Department's conviction that scholars should be encouraged to deal with significant questions about the past and to approach these questions in a methodologically sophisticated way. This approach requires that the student develop the critical abilities necessary to deal with primary sources, secondary syntheses, and the interrelationship of history and theory. Candidates for a Ph.D. in History are expected to gain teaching experience as an integral part of their graduate training. Ordinarily this is accomplished through service as a teaching assistant.

Basic to the curriculum is the Department's course in History and Theory which deals with both theoretical texts and historical studies that have utilized theoretical concepts and models. The course directs attention to the diverse implications of modernity, to the groups who dominated and were dominated by it, and to the costs and benefits of the process. These matters can be studied most satisfactorily by the historian whose theoretical self-consciousness and methodological facility have been systematically and carefully developed.

The colloquium, a reading course that examines a field's historiography, enriches the student's knowledge of the main areas of historical research and develops critical reading skills. A colloquium series is offered annually in American history; biennially (depending on demand) in modern European history, early modern European history, Latin American history, South and Southeast Asian history, East Asian history, Chinese history, world history, Middle Eastern and North African history, and ancient history; and occasionally in medieval history. A student may prepare a dissertation in any of these fields.

In addition to the History and Theory sequence and the major field colloquia, students also take a proseminar/research seminar sequence during their first year. The proseminar provides an orientation to the literature on a broad historical subject, and the associated seminar offers guidance in research and writing on problems within this broad area. Students awarded M.A. degrees at other institutions before entering the graduate program at UCI may be exempted from this requirement, subject to evaluation of their M.A. theses.

During the second year of study, Ph.D. students normally take a colloquium series in their second field. They also take a two-quarter research seminar where they have an opportunity to work on problems of their own choosing; students who entered the program with an M.A. degree must also take this seminar. In addition, independent reading and research courses are provided for advanced, specialized study in tutorial form.

The immediate objective for the doctoral student is to develop two fields of competence in addition to History and Theory. Competence in the two fields is demonstrated by the satisfactory completion of three courses in each of these areas. A comprehensive oral examination on the student's major field follows fulfillment of all degree requirements. However, those students who elect a second field administered by another program or department (e.g., Critical Theory, Asian American Studies, Feminist Studies) must complete requirements, which sometimes include a written examination, for that field. Competence in History and Theory is demonstrated by satisfactory completion of History 200A and 200B. History 200C may be taken as an elective.

The subsequent objective, to write a distinctive dissertation, is of crucial importance. To assist in accomplishing both objectives, the Department offers intensive consultation with the faculty as well as a lively intellectual atmosphere. Students have long shared in the decision-making processes of the Department, which engages the entire historical community at UCI in the collective pursuit of excellence. Students profit also from a vigorous visiting speakers program that brings scholars from other campuses and other nations to meet and interact with UCI students and faculty.

Requirements for Admission. Although it is desirable that an applicant have the equivalent of an undergraduate major in History, the Department also considers students who have previously specialized in other subject areas and who show promise of sustained and self-disciplined work in history. Typically, a minimum undergraduate grade point average of 3.3 (B+) is required for admission, with evidence of better work in history. In addition, all applicants are asked to submit three letters of recommendation and scores from the Graduate Record Examination. An example of written

work in history from undergraduate courses is also required. A departmental interview may also be required. Students are accepted for admission for fall quarter only, and the deadline for application for fall admission is January 2. The application deadline to be considered for fellowships is December 15.

MASTER OF ARTS IN HISTORY

Program of Study. Each candidate for the M.A. will choose a graduate advisor who will supervise the student's program. Nine courses are required for the degree: three in a colloquium series, a proseminar and related first-year research seminar, a secondary emphasis of two related courses (History and Theory 200A and 200B, or other), a thesis course or preparation class for the written examination in the major field (taken as 291), and another elective course. Students who decide to pursue the Ph.D. after completion of the M.A. program need to consider Ph.D. course requirements when selecting courses.

Time Limits. The M.A. requires a minimum of one year in academic residence and can be completed during that term if full-time study is undertaken. However, it is expected that many M.A. students are employed and need to enroll on a part-time basis. Therefore, students are allowed up to three years of graduate study to complete the degree.

Plan I: Thesis. The master's thesis represents a revision of the first-year research paper, equivalent to a scholarly article of 40–50 typescript pages, under the supervision of a professor in the student's major field and reviewed and approved by a three-member thesis committee, at least two of which must be History faculty members.

Plan II: Comprehensive Examination. At the end of the final quarter the M.A. candidate must pass a comprehensive written examination administered by three faculty members covering the student's major field (e.g., America, Early Modern Europe) and focused upon material assigned in the three-quarter colloquium series.

Language Requirement. Students in the M.A. program whose major field requires use of foreign language sources demonstrate competence in a foreign language in the process of writing the first-year research paper and thesis. Other M.A. students do not have to meet a foreign language or alternative skills requirement.

DOCTOR OF PHILOSOPHY IN HISTORY

Ph.D. students are advised to begin their graduate work at UCI, since those who have taken the M.A. elsewhere will be expected to enroll in the same courses that are required of all incoming students, with the exception of the First-Year Research Seminar. Subject to evaluation of their M.A. theses, these students will be exempted from this requirement. In the second and third years, the greater experience of those who enter with an M.A. may work to their advantage in speeding them to the qualifying examination.

First-Year Review. To be admitted formally into the doctoral program, students must satisfactorily pass a departmental evaluation at the end of their first year of study; this includes students who entered with an M.A. from another institution.

Emphasis in Creative Nonfiction. In addition to meeting admission requirements, applicants must submit an additional writing sample that demonstrates aptitude for the program. During their program of study, students take three of the writing workshops or their equivalents that are offered through the International Center for Writing and Translation. They also write a dissertation that meets traditional intellectual standards for academic rigor and is accessible to an audience beyond the academy.

Emphasis in the History of Gender and Sexuality. To complete this emphasis, students take three courses emphasizing feminist studies and/or queer theory in three different fields. At least two of these courses must be taken in the History Department; the third course may be either a History Department course or one of the three core graduate seminars offered through the Department of Women's Studies.

Program of Study. The Department requires doctoral students to prepare themselves in three different areas:

1. History and Theory.
2. The first field (such as Modern Europe), which is designed as a teaching field as well as the focus of the student's dissertation.
3. The second field (such as American History or Critical Theory), which is designed as a second teaching field.

The courses required in this preparation include the History and Theory sequence, colloquium series in both fields, First-Year Proseminar/Research Seminar sequence, and the Second-Year Research Seminar. The normal academic load is three courses per quarter. However, students may be eligible for approved part-time status, which allows them to take a lighter course load at reduced fees for a maximum of two academic years.

Every doctoral student will be assisted by a departmental advisor in the student's general area of study who will be responsible for approving defined fields, guiding the student to consultant faculty, and supervising the examination.

Ph.D. students can be awarded an M.A. after fulfilling requirements for residence and one language and successfully completing 36 units, including 28 in required courses. They also take a two-hour oral examination with an advisor.

Language Requirements. All students, except as specified below, must demonstrate a reading knowledge of two foreign languages prior to taking the Ph.D. candidacy qualifying examination. Competency in a language may be established either by passing a departmental examination (proctored in the department office) or through extensive language use in one of the research seminars. The specific languages that may be used to satisfy this requirement depend on the students' first fields, subject to their advisors' approval.

Students may substitute for one of their language requirements a sequence of two graduate courses in an allied discipline or relevant methodology (e.g., critical theory, political theory, cultural anthropology, Asian American studies, feminist theory, art history, linguistics, statistics, quantitative methods), at the discretion of their major field advisors. Students choosing this option are normally expected to write a substantial paper and must demonstrate that the allied discipline or methodology used to fulfill the requirement is of value to historical inquiry. The course(s) taken to satisfy a language requirement may not count toward fulfilling the requirement for the second field.

Qualifying Examination and Dissertation. In preparation for the oral Qualifying Examination, the student will present to the Ph.D. Candidacy Committee a portfolio of three papers totaling at least 45 pages on subjects related to the major field (but not from required colloquia courses). Successful completion of this examination results in the student's advancement to Ph.D. candidacy. The normative time for advancement to candidacy is three years. Within one academic quarter of the oral examination, new candidates must meet in a colloquy with their Doctoral Committee to present their dissertation proposal. Once the Doctoral Committee approves the proposal, the student begins intensive work on the dissertation. The research and writing involved in this effort may require from one to four years. At the end of this period an oral defense of the dissertation, focusing on the adequacy of the student's research and thesis, is normally held.

For students who enter with normal academic preparation and pursue a full-time program of study, the normative time to degree for the Ph.D. is seven years. The maximum time permitted is nine years.

Courses in History

(Schedule of Classes **designation: History)**

LOWER-DIVISION

INTRODUCTORY COURSES

Courses of general interest for all students. No prerequisites. Designed to survey particular fields or themes and to introduce methods and premises of historical study. Many of these courses fulfill part of the UCI general education requirement.

11 Introduction to Peace and Conflict (4). Examines the causes and effects of international violence, focusing on World War I, World War II, and the Cold War. Relates what is known about the dynamics of war to what is understood by conditions of peace. Required for the minor in Conflict Resolution. **(IV, VIII)**

12 Introductory Topics in History (4). Introduces methods and premises of historical study. Topics include introductions to cultural, political, economic, social, and religious history. May be repeated for credit as topics vary. **(IV)**

15 American Ethnic History

15A Native American History (4). Introduction to multiple topics: indigenous religious beliefs and sociopolitical organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. **(IV, VII)**

15C Introduction to Asian American Studies I (4). Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as Asian American Studies 60A and Social Sciences 78A. **(III, VII)**

18A Introduction to Jewish Cultures (4). Introduction to the diversity of Jewish cultures from ancient to modern times. Surveys the Jewish experience in various societies and civilizations: ancient Mediterranean, Middle East and North Africa, Europe, and the Americas. **(IV, VIII)**

21 World History

21A World History: Beginnings to 1650 (4). Treats major themes of world historical development through the mid-seventeenth century, focusing on the Eurasian world, but with secondary emphasis on Africa and the Americas. **(IV, VIII)**

21B World History: 1650–1870 (4). Examines three major transformations that made the world of 1870 dramatically different from that of 1650: e.g., the scientific revolution, industrialization, and the formation of modern states and nations. **(IV, VIII)**

21C World History Since 1870 (4). Considers several major currents of modern history: technological change and its social effects; changes in gender relations; totalitarianism; peasant revolutions and the crisis of colonization; international migration; and ecological problems. **(IV, VIII)**

36 The Formation of Ancient Greek Society. An overview of ancient Greek civilization and its interactions with other cultures of the Mediterranean world. Focuses on major institutions and cultural phenomena as seen through the study of ancient Greek literature, history, archaeology, and religion. Same as Classics 36A, B, C.

36A Early Greece (4). (IV)

36B Late Archaic and Classical Greece (4). (IV)

36C Fourth-Century and Hellenistic Greece (4). (IV)

37 The Formation of Ancient Roman Society. A survey of the principal aspects of Roman civilization from its beginnings to the so-called Fall of the Roman Empire in C.E. 476. Focuses on political history and ideology, social history, literature, art and architecture, and religion. Same as Classics 37A, B, C.

37A Origins to Roman Republic (4). (IV)

37B Roman Empire (4). (IV)

37C The Roman Legacy (4). (IV)

40 The Formation of American Society. An introduction to the social, economic, political, and cultural development of the United States from the fifteenth century to the present. Any one quarter of history 40A, 40B, or 40C satisfies the American History portion of the UC American History and Institutions requirement.

40A The Formation of American Society: 1492–1790 (4). (IV)

40B The Formation of American Society: The Nineteenth Century (4). (IV)

40C The Formation of American Society: The Twentieth Century (4). (IV)

50 Crises and Revolutions (4). Study of turning points in world history, illustrating themes and methods of historical analysis. May be taken for credit three times as topics vary. **(IV, VIII)**

60 The Making of Modern Science (4). Surveys the history of science and mathematics since the Scientific Revolution, examining central developments both chronologically and thematically, as well as investigating their significance for contemporary philosophical debates about the role and status of current scientific theories. Same as Logic and Philosophy of Science 60. **(IV)**

70 Problems in History. An introduction to the historical problems, the issues of interpretation, the primary sources, and the historical scholarship of the history of Asia, Europe, the U.S., Latin America, the Middle East, and Africa, as well as transregional history, with an emphasis on developing skills in historical essay-writing. May be repeated for credit as topics vary, but each region may only apply once toward the three required courses from the History 70 series for the History major or minor.

70A Problems in History: Asia (4). (IV, VIII)

70B Problems in History: Europe (4). (IV, VIII)

70C Problems in History: United States (4). (IV)

70D Problems in History: Latin America (4). (IV, VIII)

70E Problems in History: Middle East and Africa (4). (IV, VIII)

70F Problems in History: Transregional History (4). (IV, VIII)

UPPER-DIVISION

HISTORICAL STUDIES

Courses in which students gain experience in analysis, interpretation, and writing.

100 Writing About History (4). Specialized courses focusing on history writing and research skills. Each class reflects the instructor's intellectual interests and is conducted as a discussion group. Limited to 18 students. Several short writing assignments and one longer project meeting the upper-division writing requirement. Prerequisites: History major and satisfactory completion of the lower-division writing requirement.

101 History of the World Economy (4). Beginning with a discussion of different economic "worlds" of the 1400s, traces the complex processes by which these worlds began to influence each other, ending with the twentieth-century world economy. Topics include imperialism, industrial revolution, migration, slave trade. **(VIII)**

102B Topics in Environmental History (4). Explores the many historical interfaces between climate change, modes of production, and culture. Topics include the environmental history of warfare, imperialism, and famine in the nineteenth century and the history of environmental thought. **(VIII)**

103 Topics in International Conflicts (4). A study of international conflicts from military, social, economic perspectives with a focus on the preparation for and conduct of war and the consequences. May be repeated for credit as topics vary. Formerly History 100A. **(VIII)**

ANCIENT HISTORY

105 The Roman Empire. Creation of a bureaucratic empire; rule by gentry and officers; official culture and rise of Christianity; social conflict and political disintegration.

105A Early Roman Empire (4)

105B Later Roman Empire (4)

EUROPEAN HISTORY

110 Medieval Europe

110A Europe in the Early Middle Ages (4). Survey of Europe between 300 A.D. and 900 A.D. Topics include the breakup of the Roman Empire, barbarian invasions, spread of Christianity, rise of Islam, the Carolingian Empire, and the Vikings. **(VIII)**

110B Europe in the Central Middle Ages (4). Survey of European history from ca. 900 to ca. 1300. Topics discussed include the growth of the economy, feudalism, the crusades, the rise of towns, the development of the church, popular heresy, and the rise of large-scale polities. **(VIII)**

110C Europe in the Later Middle Ages (4). Survey of European history from ca. 1300 to ca. 1500. Topics include the Black Death, the crisis of the economy, the Hundred Years' War, peasant and urban uprisings, and the Great Schism. **(VIII)**

110D Topics in Medieval Europe (4). May be repeated for credit as topics vary.

112 Early Modern Europe

112A Renaissance Europe (4). Survey of the Renaissance in Italy and northern Europe.

112C Europe of the Old Regime (4). Survey of the social, cultural, and political history of Europe from the middle of the seventeenth century to the French Revolution. **(VIII)**

112D Topics in Early Modern Europe (4). Theme-based approach to the main social, political, and cultural developments in Europe between the fifteenth and eighteenth centuries. Topics include Renaissance humanism, Reformation and Counter-Reformation, scientific revolution, court culture and nation building, interactions with non-European peoples, and cities and commerce. May be repeated for credit as topics vary. **(VIII)**

114 Topics in Modern European History (4). Course content changes with instructor. Topics include the Inquisition; science and religion in modern Europe; sex and society in modern Europe; French revolutions; culture in interwar Europe; the Holocaust; the fall of communism in Eastern Europe. May be repeated for credit as topics vary. **(VIII)**

115A Europe: 1350–1750 (4). The period 1350–1750 begins with the devastation of the Great Plague and ends with a renewed "enlightened" Europe invested in global colonial ventures. In short, an exploration of the emergence of the modern world. **(VIII)**

116 Medieval England

116A England in the Early Middle Ages (4). Survey of English history from ca. 400 to ca. 1200. Topics include the Anglo-Saxons, the Viking settlement, the Norman Conquest, the Angevin Empire, and the development of royal, legal, and administrative mechanisms. **(VIII)**

116B Later Medieval England (4). Survey of English history between ca. 1200 and ca. 1500. Topics include the Magna Carta, the Barons' War, the Welsh and Scottish wars, the development of Parliament, the Hundred Years' War, and the War of the Roses. **(VIII)**

117B Stuart England (4). Survey of English history from the early-seventeenth century until the early-eighteenth century. Concentrates on the causes of the English Revolution and the Revolution itself, the Restoration, and the Protestant ascendancy. **(VIII)**

118 Great Britain

118A Modern Britain: 1700 to 1850 (4). Examines the major developments in British politics, socioeconomic structure, and culture from 1700–1850. The development of the British nation-state and the fashioning of a national identity. Explores basic questions about British national identity. **(VIII)**

118B Modern Britain: 1850 to 1930 (4). Examines the social, economic, and political history of Britain from 1850–1930. Post-industrialism, urbanization, population and economic change, increased political participation by working classes and women, consolidation of the empire and the breakup of the United Kingdom. **(VIII)**

118C Modern Britain: 1930 to Present (4). Explores Britain from the Second World War to the resignation of Margaret Thatcher. Examines Britain's devolution from world power to member of the European Community; transition from a manufacturing to service-based economy; changing demographic and racial composition in light of decolonization. **(VIII)**

120 France. Emphasis on social, economic, and cultural history of France since the Great Revolution.

120B The French Revolution: 1774–1815 (4). (VIII)

120C France in the Nineteenth Century (4). (VIII)

120D France in the Twentieth Century: 1914 to Present (4). (VIII)

120E History of Paris (4). The development of Paris from the beginnings through the present, with emphasis on the last three centuries. The city is examined from the political, social, ecological, and architectural points of view as well as through the perspective of urban planning. **(VIII)**

122 Germany. Political, social, and economic history from 1815 to the present.

122A Emergence of the German Nation: 1815–1890 (4). (VIII)

122B Hitler and the Germans (4). Focuses on Hitler's rise to power and Nazi society. Examines Germany's defeat in World War I; the political and cultural experimentation of the 1920s; the causes of Hitler's success; and life in Germany under the Nazis. **(VIII)**

122C World War, Cold War, and Reunification: 1939– (4). (VIII)

123 Spain

123C Twentieth-Century Spain: 1898–Present (4). Examination of political, social, and cultural conflict under the parliamentary monarchy and the II Republic; the Spanish Civil War and the popular revolution of 1936; Spanish fascism and the Franquist dictatorship; and the transition to constitutional democracy after 1975. **(VIII)**

123D Topics in Spanish History (4). Topics include Spain in the nineteenth century, the Spanish Civil War, and dictatorship and democracy in modern Spain. May be repeated for credit as topics vary. **(VIII)**

124 Russia. Political and social developments from traditional Russia to the present Soviet society.

124A Imperial Russia: 1689–1905 (4). (VIII)

124B Twentieth-Century Russia (4). (VIII)

126 The World Wars

126A The Era of World War I: 1900–1939 (4). (VIII)

126B The Era of World War II: 1933–45 (4). (VIII)

126C The Cold War and After: Europe and the World, 1945–91 (4). (VIII)

127 European Cultural and Intellectual History. Main currents of Western thought, emphasizing English, French, and German thinkers.

127B Hegel to Nietzsche (4). (VIII)

127C Freud to Sartre (4). (VIII)

127D Contemporary European Thought (4)

128 European Women and Gender History

128A Women and Gender in Early Modern Europe: 1400–1700 (4). Explores what it meant to be a woman in early modern Europe. Students examine women's lives in early modern Europe while developing skills of historical interpretation. Topics include: notions of masculinity and femininity; "proto-feminism"; marriage and sexuality; female piety and witchcraft. **(VIII)**

128C Topics in the History of Women in Europe (4). May be repeated for credit as topics vary. **(VIII)**

JEWISH, MUSLIM, MIDDLE EAST, AND AFRICAN HISTORY

130 Jewish History

130A Jewish History, Ancient to Early Modern Times (4). The history of the Jewish people from their origins in the ancient world to the 1700s. Social, religious, and intellectual life of Jewish communities in the Middle East, North Africa, and Europe. **(VIII)**

130B Modern Jewish History (4). History of the Jews in Europe, the Middle East, North Africa, and the United States from the early-eighteenth century to recent times. Emancipation, assimilation, religious reform, antisemitism, Zionism, socialism, the Holocaust, and modern Israel are the major themes. **(VIII)**

130C Topics in Jewish History (4). May be repeated for credit as topics vary. **(VIII)**

131 Topics in Islamic History (4). Examines the evolution of Islam as a religion within the social, political, and economic histories of various Muslim societies throughout its 14 centuries. Introduction to major concepts, practices, and texts of Islam, and key historical events associated with them. May be repeated for credit as topics vary. **(VIII)**

132 Israel and Palestine (4). Origins of Zionism in the nineteenth century, Arab-Jewish conflicts in Palestine, emergence of Palestinian nationalism, the formation of the Israeli nation after 1948, and the development of the Palestinian movement. Focus on Palestinian and Israeli society and culture. **(VIII)**

133A The Emergence of the Modern Middle East (4). Offers a survey of the history of the Middle East from the nineteenth century to the present time. **(VIII)**

134 Africa

134A Africa: Societies and Cultures (4). Introduction to the variety of cultures, political organizations, social structures, and artistic expressions created by Africans over a broad time span. The indigenous development of African societies in distinct regions of the continent. Issues, themes, processes for understanding history of Africa. **(VIII)**

134B Modern Africa (4). Explores the last 200 years of history in Africa, from the end of the Atlantic slave trade through colonization to independence. **(VIII)**

134C Topics in the History of Africa (4). May be repeated for credit as topics vary. **(VIII)**

134D Topics in South African History (4). Introduction to important historical events and processes in Southern Africa. Focuses on particular themes and explores how those themes change over time. Topics include: changing ideas about race, the development of class structures, identity formation, the role of gender. **(VIII)**

134E History of the African Diaspora (4). Examines the causes and consequences of the multiple diasporas of African peoples since the sixteenth century in the Atlantic world, especially the Americas and Europe. Same as African American Studies 137.

HISTORY OF SCIENCE AND TECHNOLOGY

135 History of Science

135B Navigation (4). Explores the basics of oceanography, the evolution of ships and sailing in the ancient Mediterranean world, the North Atlantic, Polynesia, the South China Sea, the Arab Indian Ocean, the global oceanic world, and the discovery of celestial and terrestrial navigation.

135C Exploring the Cosmos (4). After briefly considering the invention of astronomy in antiquity and the Copernican revolution, examines the development of solar science; the triumph of the view of the expanding universe; and a medley of themes in post-1945 astrophysics and cosmology.

135D History of Cartography (4). Examines how technology has assisted in creating visual representations of place, space, and time beginning in ancient Babylonia to the present day.

135E Topics in the History of Science and Technology (4). May be repeated for credit as topics vary.

135F History of Technology (4). Explores the historical and contemporary products and processes that have improved and abused the forces of nature. Examines the earliest technicians, the transmission of technological ideas and practices, and the relationship between society and technological change.

HISTORY OF MEDICINE AND HEALTH CARE

136 History of Medicine and Health Care

136B Race and Medicine (4). Examines racial politics in the development of American medicine from 1870 to 1990s. Racial subordination and the American Medical Association, discrimination in medical education and black medical schools, the National Medical Association, black doctors and war, health care inequities and AIDS.

136D Topics in the History of Medicine and Health Care (4). May be repeated for credit as topics vary.

136E History of Epidemics and Infectious Disease (4). Examines how epidemics tax political, economic, and spiritual resources and challenge prevailing medical theories and practices. Looks at how society has responded to epidemics and disease throughout history, beginning in antiquity and ending in the present.

139 History and Prose Composition (4). Requires at least 4,000 words of assigned composition based upon historical works. History majors are given admission priority. Prerequisites: satisfaction of the lower-division writing requirement; junior standing or consent of instructor. May be repeated for credit as topics vary.

AMERICAN HISTORY

140 The Development of the American Nation. Growth of a distinctively American society out of the colonial heritage, with emphasis on social and economic bases of culture and politics, sectionalism, industrialization, and the United States as a world power.

140A Early America: 1492–1740 (4). Examines the history of the land that became the first 13 states of the United States, from early attempts at exploration and discovery to the economic growth and demographic heterogeneity that marked the white settlements of the early 1700s.

140B Revolutionary America: 1740–1790 (4). An exploration of why 13 continental colonies, whose commercial and cultural connections with Britain far exceed their interaction with one another, resisted imperial reform after 1763 to the point of war in 1775 and independence the following year.

140F The United States in the 1890s (4). A social, cultural, political history of U.S. in 1890s. Topics include racial politics of Jim Crow; Spanish-American War and conquest of the Philippines; "New Women" and gendering of modern culture; rise of cities, urban reform, labor resistance to new capitalist order.

142 American Social and Economic History

142A California in Modern America (4). California as a case study of national trends and as a unique setting: its specific problems and culture. Major themes include: colonization, immigration, race relations, agricultural development, industrialization, urbanization, working class movements, social conflict, and political reform.

142B Topics in American Social and Economic History (4). May be repeated for credit as topics vary.

144 American Intellectual and Cultural History

144A Early American Cultural and Intellectual History (4). Examination of ideas and culture during the early American period, with emphasis on the relationship of ideas to their social, political contexts. From contact to Puritanism to the Revolutionary era, with attention to constructions of class, race, gender.

144F Utopian Experiments in American History (4). Focus on the cooperative dimension of the American experience; the large number of intentional experiments in community living and alternative lifestyles in the nineteenth and twentieth centuries. Examination of both the ideological foundations of communitarianism and specific historical case studies.

144G Topics in American Cultural and Intellectual History (4). May be repeated for credit as topics vary.

145 American Working-Class History (4). Traces formation of the American working-class and examines its response to the changing structures of economic/political power determined by nineteenth-century industrial capitalism and twentieth-century imperialism. Issues/intersections of race, culture, and gender are examined.

146 Women and Gender Relations in the United States. An examination of changes in gender relations and in the conditions of women's lives from the 1700s on. Emphasis on race and class, cultural images of women and men, sexuality, economic power, and political and legal status.

146D Sex in the U.S. to 1860 (4). Perspectives on sexual behavior in colonial and U.S. history to c. 1860. Mainstream and non-mainstream sexual practices, beliefs, identities. Asks why various ideas of sexual behavior developed and how they related to religious, racial, ethnic, political, cultural belief systems. **(VII)**

146E Gender in Nineteenth-Century America (4). A social and cultural history of women's lives in nineteenth-century America, examining how racial, sexual, class identities were constructed by women themselves and by their surrounding culture. Topics include slavery, anti-slavery movement, domesticity, experience of the Civil War. **(VII)**

146H Topics in Women and Gender Relations in the United States (4). May be repeated for credit as topics vary. **(VII)**

148B Topics in Multicultural U.S. History (4). Examines the variety of cultural expressions through which the people who came to inhabit the United States historically signify their collective identities. May be repeated for credit as topics vary. **(VII)**

150 Topics in African American History (4). May be taken twice for credit as topics vary. Same as African American Studies 138. **(VII)**

150A Early African American History (4). Introduction to the main social, political, and political contours of the African American experience from the importation of Africans into the Americas, from the seventeenth through the eighteenth centuries. May be taken twice for credit as topics vary. Same as African American Studies 133A.

150B African American History 1900–Present (4). Examines different dimensions—economic, cultural, political, and social—of the African American experience since 1900, including pattern and forms of struggle against racist oppression and exploitation. May be taken twice for credit as topics vary. Same as African American Studies 133B.

150C New World Slave Societies (4). Examines the origins, development, operation, and end of slave societies in the Americas, including the pattern and forms of slave resistance. Focuses primarily upon the U.S., the Caribbean (Hispanic and non-Hispanic), and Brazil. Same as African American Studies 132A.

150D Slavery in the United States (4). Explores the origins, development, and operation of the institution of slavery in the U.S. from colonial times to the end of the Civil War. Experiences in the North and South are explored, right through to the end of slavery. Same as African American Studies 132B.

151 Chicana/Chicano History

151A Chicana/Chicano History: Pre-Colonial to 1900 (4). Examines social history of the southwest region from antiquity to 1900. Discusses major questions, theory and research methods pertinent to Chicanas/Chicanos. Themes include: indigenous empires, conquest, colonialism, social stratification, ideology, marriage, sexuality, industrial capitalism, accommodation and resistance. Same as Chicano/Latino Studies 132A. **(VII)**

151B Chicana/Chicano History: Twentieth Century (4). Examines social history of the Southwest with emphasis on Mexican-origin people. Discusses major questions, theory and research methods pertinent to Chicana/Chicano history. Themes explored include: immigration, xenophobia, class struggle, leadership, generational cohorts, unionization, education, barrioization, ethnicity, patriarchy, sexuality. Same as Chicano/Latino Studies 132B. **(VII)**

151C Latinas in the Twentieth Century U.S. (4). Latinas in the U.S. from 1900 to present, offering a diversity of their cultures, regional histories, sexualities, generations, and classes. Same as Chicano/Latino Studies 135. **(VII)**

152 Topics in Asian-American History (4). Introduction to important themes in the history of people of Asian ancestry in the United States from the nineteenth century to the present. May be repeated for credit as topics vary. **(VII)**

152A Asian American Labor (4). Explores history of Asian Americans and work from the nineteenth century to the present. Areas of study include migration, colonialism, family, social organization, and work culture. Same as Asian American Studies 137. **(VII)**

152B Asian American and African American Relations (4). Addresses relationships of Asian American and African American communities in the United States. Topics include race, class, gender, labor, economic systems, political mobilization, community, civil rights, activism, cultural expression. Same as Asian American Studies 167 and African American Studies 117. **(VII)**

153 American Legal History (4). Introduction to American legal case materials, to legal categories and ways of thinking, and to selected topics in U.S. legal history. Does *not* offer a chronological survey of the development of law in the United States.

158 History of American Foreign Relations

158A U.S. as a Global Power (4). Examines post-World War II cultural, economic, and strategic patterns that have shaped U.S. relations with the world. Presents diverse perspectives on issues such as nationalism, anti-communism, secrecy and covert action, economic influences, the media's role, and race, gender, and class-related stratifications. **(VIII)**

158B Rise of U.S. Empire (4). Examines growth of U.S. empire from the eighteenth century to World War II. Considers settler colonialism; acquisition of colonies, protectorates, and dependencies; and "market empire." Emphasizes imperial justifications, techniques, and interactions, as well as the recurring domestic debates over imperial projects. **(VIII)**

LATIN AMERICAN HISTORY

161 Mexico

161A Indian and Colonial Societies in Mexico (4). Examines the history of Colonial Mexico from prehistoric times to the eighteenth century. Focuses on the social, economic, and political evolution of the new Mexican society which resulted from the "meeting" of two cultures. **(VIII)**

161C Twentieth-Century Mexico (4). Examines the history of contemporary Mexico beginning with the Mexican Revolution and concluding with the present administration. Social, economic, and political effects of the Revolution; formation of a "one-party democracy"; economic transformation of the nation; the present crisis. Same as Chicano/Latino Studies 133B. **(VIII)**

162 Brazil (4). Overview of social, economic, and political developments since 1500.

163 The World of Coffee (4). History of consumption and production of coffee over the centuries and coffee's cultural, economic, social, political consequences. Coffee's social life as a drug, symbol of hospitality, religious rite, sociability and bourgeois lifestyle, commodity, and source of livelihoods, imperial revenues, corporate profits. **(VIII)**

164A Caribbean History: Colonization to Emancipation (4). Exploration of the history of the archipelago from pre-Columbian times to the end of slavery; examining the impact of European colonization, decimation of the indigenous populations, African slavery, resistance, and emancipation; the unity and diversity of experience in region. Same as African American Studies 134A.

164B Caribbean History: Emancipation to Independence (4). Post-emancipation and anti-colonial struggles ending with political independence for most of the region. Examines social, political, economic, cultural dimensions of post-emancipation period, including large-scale migration to Central America, the U.S., and Britain; the region's global cultural and political contribution. Same as African American Studies 134B.

165 Race and Empire in Colonial Latin America (4). Explores how native people of Latin America with enslaved and free Africans incorporated and defied Spanish and Portuguese colonization. Focuses on religious adaptions, resistance movements, legal systems, and the emergence of multicultural communities to explain how race shaped European empires. **(VIII)**

169 Topics in Latin American History (4). May be repeated for credit as topics vary. **(VIII)**

ASIAN HISTORY

170 East Asia: Traditions and Transformations

170D Premodern East Asia (4). Introduction to the histories of China, Korea, and Japan from the earliest states to about 1600. Topics include: state formation and dissolution; the role of ideology and how it changes; religious beliefs and values; agriculture, commerce, and industry; changing family relations. **(VIII)**

170E East Asia: 1600–1895 (4). Introduction to China, Korea, and Japan from about 1600 to 1895. Establishment of Qing Chinese, late Choson Korean, and Tokugawa Japanese sociopolitical orders and their characteristics, plus major cultural developments. Responses to Western impact and the rise of Meiji Japan. **(VIII)**

170F East Asia Since 1895 (4). Introduction to the turbulent modern histories of China, Korea, and Japan since 1895. An overarching concern is to understand the evolution of modern East Asia and its place for humankind's future. **(VIII)**

170G Topics in the History of Asia (4). Topics include the cultural, political, economic, social, intellectual, and religious history of Asia. May be repeated for credit as topics vary. **(VIII)**

171 China

171D Chinese History to 1800 (4). A survey of the history of China to 1800. **(VIII)**

171E Chinese History: 1800–1949 (4). An examination of Chinese society and thought from the late-eighteenth century to the 1949 revolution. Focuses on the role of intellectuals; popular culture; women in Chinese society; developments in commerce and urban life; rebellion; foreign imperialism. **(VIII)**

171G Topics in the History of China (4). Topics include the cultural, political, economic, social, intellectual, and religious history of China. May be repeated for credit as topics vary. **(VIII)**

172 Japan

172D Age of the Samurai (4). Topics include the simultaneous elaboration of a civilian aristocratic tradition and the military ethos, the conflict between martial and economic values in the context of an expanding economy, and the development of Japan's indigenous religions, art, and literature. **(VIII)**

172E Imperial Japan (4). Topics in the rise of modern Japan include the relationship between centralization and imperialism, democracy and fascism, industrialization and feminism in the context of the complex and competing forces that shaped Japan's experience in the modern world. **(VIII)**

172F Postwar Japan (4). From the ashes of defeat to economic superpower, from poverty to material consumerism, from the ethic of diligence and fortitude to hedonism. Addresses what these changes have meant for ordinary people, as well as government policy and Japan's international position. **(VIII)**

172G Topics in the History of Japan (4). Topics include the cultural, political, economic, social, intellectual, and religious history of Japan. May be repeated for credit as topics vary. **(VIII)**

173 Korea

173D Korean History to 1800 (4). A general survey of the history of Korea to 1800. Focuses on internal sociopolitical development, major cultural trends, and foreign relations. Students are introduced to various interpretive approaches in the historiography. **(VIII)**

173E Korean History: 1800–1945 (4). An examination of Korean society and culture in tumultuous transition, focusing on some new challenges for the Choson Dynasty and its abortive reform effort, external imperialist pressures, and the Japanese colonial rule. **(VIII)**

173F Korean History Since 1945 (4). Topics include the national liberation, origins of conflict between two rival regimes, South Korea's emergence as a major player in the international political economy, some salient characteristics of the North Korean Marxist state, triumph of democracy, and prospect for reunification. **(VIII)**

173G Topics in the History of Korea (4). Topics include the cultural, political, economic, social, intellectual, and religious history of Korea. May be repeated for credit as topics vary. **(VIII)**

SOUTH AND SOUTHEAST ASIA

174G Topics in the History of South Asia (4). Topics include the cultural, political, economic, social, intellectual, and religious history of South Asia. May be repeated for credit as topics vary. **(VIII)**

175 Southeast Asia

175F War in Vietnam (4). A comprehensive view of Vietnamese and American perspectives on the U.S. war in Vietnam, offering an in-depth historical background to Vietnam's internal dynamics, American perceptions of Vietnam, military and political strategies, and the experiences of Vietnamese and Americans directly involved. **(VIII)**

175G Topics in the History of Southeast Asia (4). Topics include the cultural, political, economic, social, intellectual, and religious history of Southeast Asia. May be repeated for credit as topics vary. **(VIII)**

SPECIAL STUDIES

Topics with particular methodological foci. Content varies; departmental office has quarterly list of topics. May be repeated for credit as topics vary.

180 Special Studies in Social History (4)

181 Special Studies in Economic History (4)

182 Special Studies in Intellectual-Cultural History (4)

183 Special Studies in International History (4)

184 Special Studies in Comparative History (4)

185 Special Studies in Social Theory (4)

HISTORICAL RESEARCH FOR HISTORY MAJORS

190 Colloquium (4). Specialized courses dealing primarily with close reading and analysis of primary and secondary works; required reports and papers. Each colloquium reflects the instructor's intellectual interests and is conducted as a discussion group. Limited to 18 students. Prerequisites: History 100, upper-division standing, and History major. May be repeated for credit as topics vary.

192 Research Seminar (4). Specialized courses that require analysis of a historical problem through research in primary sources and the preparation of an original research paper. Prerequisites: History 100 and 190, upper-division standing, and History major. May be repeated for credit as topics vary.

198 Directed Group Study (4). Special topics through directed reading. Paper required. Prerequisite: consent of instructor.

199 Independent Reading (1 to 4). Investigation of special topics through directed reading. Paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE COURSES

In addition to the following courses, graduate students in History might find Humanities 220 (Literary Theory and Its History) and Humanities 270 (Advanced Critical Theory) to be of interest.

HISTORY AND THEORY

200A, B, C History and Theory (4, 4, 4) F, W, S. Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Completion of History 200A and 200B is required for all History Ph.D. students. History 200C is optional. Same as Humanities 200A, B, C.

202 Proseminar (4). Topical courses devoted to the literature of a broad historical subject, e.g., the absolutist state, the French Revolution, comparative industrialization, women's history. May be repeated for credit as topics vary.

203 First-Year Research Seminar (4). Course devoted to research and writing on questions connected with proseminar topics. Normally required of all entering graduate students. Includes review of the current state of the literature and practical experience in conducting research and writing a research paper. Prerequisite: History 202.

204A-B Second-Year Research Seminar (4-4). Two-quarter sequence required of all Ph.D. students. Normally taken during the second year of the Ph.D: program; not required for M.A. students. Includes review of the current state of the literature and practical experience in conducting research and writing a research paper.

220 The Literature and Interpretations of Early-Modern Europe. *Not offered every year.*

220A Society and Economy (4)

220B Political History (4)

220C Intellectual and Cultural History (4)

230 The Literature and Interpretations of Modern European History. *Not offered every year.*

230A Europe: 1789-1848 (4)

230B Europe: 1850-1914 (4)

230C Europe: 1914-1989 (4)

240 The Literature and Interpretations of World History. *Not offered every year.*

240A Approaches to World History (4)

240B Topics in World History (4)

240C Advanced Research in World History (4)

250 The Literature and Interpretations of Latin American History. *Not offered every year.*

250A Colonial Period (4)

250B Nineteenth Century (4)

250C Twentieth Century (4)

260 The Literature and Interpretations of American History

260A Seventeenth and Eighteenth Centuries (4)

260B Nineteenth Century (4)

260C Twentieth Century (4)

273 Research Methods in Chinese History (4). Introduces major tools for research in Qing and twentieth-century Chinese history as well as an introduction to research tools for earlier periods. *Not offered every year.*

274 Seminar in Chinese History. May be repeated for credit as topics vary.

274A Chinese History: 1100-1750 (4)

274B Chinese History: 1600-1937 (4)

274C Chinese History: 1850-Present (4)

275 The Literature and Interpretations of Middle Eastern and North African History. *Not offered every year.*

275A Approaches to Islam in the Middle East/Maghrib (4)

275B Ottoman and Modern Middle East (4)

275C The Maghrib Since 1500 (4)

280 Literatures and Interpretations of East Asian History. *Not offered every year.*

280A China (4)
280B Japan (4)
280C Korea (4)

284A, B, C Seminar in French History (4, 4, 4) F, W, S. The development of French society and culture from the Old Regime to the present. May be used to fulfill the First-Year Research Seminar requirement. Prerequisite for 284C: 284A and 284B. *Not offered every year.*

SPECIAL STUDIES

290 Special Topics (4) F, W, S. Lectures, readings, and discussion on subjects more limited in scope than those included in the year-long colloquium series. May be repeated for credit as topics vary.

291 Directed Reading (4 to 12) F, W, S. Reading courses focused on specialized topics. Prerequisite: consent of instructor.

295 Special Methods (4). Development of particular research skills.

298 Experimental Group Study (4). Open to four or more students. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

299 Dissertation Research (4 to 12) F, W, S. Specifically designed for students researching and writing their dissertations. Prerequisite: consent of instructor; advancement to Ph.D. candidacy.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

UNDERGRADUATE PROGRAM IN HUMANITIES AND ARTS

152 Humanities Instructional Building; (949) 824-9290
Carrie Noland, **Co-Director (Humanities)**
Jennifer Fisher, **Co-Director (Arts)**

Core Faculty

Stephen Barker, *Department of Drama*
David Brodbeck, *Department of Music*
Julia Bryan-Wilson, *Department of Art History*
Jennifer Fisher, *Department of Dance*
Martha Gever, *Department of Studio Art*
Lynn Mally, *Department of History*
Ian Munro, *Department of Drama*
Carrie J. Noland, *Department of French and Italian*
James Penrod, *Department of Dance*
Frank B. Wilderson III, *Departments of African American Studies and Drama*

Undergraduate Program

The major in Humanities and Arts allows motivated students to create their own interdisciplinary major with one focus in the School of Humanities and the other in the School of the Arts. Students work toward a critical and historical mastery of aesthetic theories and practices while learning about the process of making creative work. A humanist background will equip them to participate more effectively as artists, citizens, and critics in a world where critical thinking and creativity are vital to success in a variety of work environments.

Humanities and Arts students are given the opportunity to work closely with faculty from different academic disciplines. They are able to design a highly individualized course of study and have the opportunity of completing a senior project thesis with one of the Humanities and Arts affiliate faculty. This major's focus on the connection between practice and analysis distinguishes it from the broader and more diverse scope of more general interdisciplinary programs. The scholarly work of many UCI faculty in the Humanities and Arts lies at an intersection between the two academic units, and the major translates this intellectual and creative activity into a coherent curriculum and projects current forms of scholarship and artistic practice into the classroom.

CAREER OPPORTUNITIES

There is a steadily growing market in private industry for students whose training combines skills sharpened by both the Humanities and Arts. Business demands graduates with strong writing and analytic skills, talents stressed in the Humanities. This major promotes creativity and confidence, as well as putting original ideas into practice, something emphasized in the Arts. Graduates of this program will be very attractive to teacher-training programs, academic Ph.D. programs, and businesses in creative industries. Graduates may find work in professional fields directly allied with the Arts, including museum work, art foundations, art criticism, journalism, theatre, and the entertainment industry.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Application Process for the Humanities and Arts Major

New students are not admitted directly to the Humanities and Arts major. Continuing students apply to change their major to Humanities and Arts no earlier than the fall quarter of their sophomore year. Complete information about changing majors to Humanities and Arts is available at http://www.changeofmajor.uci.edu. Students must submit a transcript and meet the change-of-major criteria for each of the two departments they propose to combine. In addition, a program of study, approved by the designated faculty member in the Claire Trevor School of the Arts and in the School of Humanities, is required for admission to Humanities and Arts. Students are strongly encouraged to consult with the Humanities Student Affairs Office early in their decision to apply to Humanities and Arts.

REQUIREMENTS FOR THE B.A. DEGREE IN HUMANITIES AND ARTS

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Requirements for the Major

A. Humanities 1A-B-C.

B. One lower-division survey in a specialization in the Arts, chosen from Dance 90A-B-C, Drama 40A, B, C, Music 14A-B-C, Studio Art 9A, B, C.

C. Six units of "studio courses" in Dance, Drama, or Studio Art *or* six units of "ensemble courses" in Music.

D. Humanities and Arts 100 (taken to satisfy upper-division writing).

E. Humanities and Arts 101.

F. Sixteen additional units of upper-division Humanities courses focusing on a specific theme, region, or period, chosen with the approval of the Humanities and Arts faculty advisors.

G. Sixteen additional units of upper-division Arts courses focusing on a specific medium (e.g., photography) or practice (e.g., modern dance). Students must have their proposed program of study approved by their advisors each year.

It is expected that students will choose their courses from one major in the Humanities and one major in the Arts. Students with well-developed interests can shape their curriculum more precisely to their needs.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Courses in Humanities and Arts

(Schedule of Classes **designation: HumArts)**

100 The Arts in Theory and Practice (4). Writing seminar explores writings on art from different times and cultures. How have artists and critics in different cultural contexts tried to explain the principles and theories that guide their work? How can students use their concepts to assess art works? Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Arts and Humanities 100.

101 Topics in Arts and Humanities (4). This interdisciplinary course examines themes relevant to both the Arts and the Humanities. May be repeated for credit as topics vary. Same as Arts and Humanities 101.

199 Independent Study (1 to 4). Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisites: consent of instructor and approval of Faculty Advisor. May be repeated for credit as topics vary.

SPECIAL PROGRAMS

Minor in Humanities and Law

152 Humanities Instructional Building; (949) 824-9290
Martin Schwab, **Director**

Participating Faculty

Ermanno Bencivenga, *Department of Philosophy*
Yong Chen, *Departments of History and Asian American Studies*
James B. Given, *Department of History*
Gail K. Hart, *Department of German*
Lamar M. Hill, *Department of History*
Bonnie Kent, *Department of Philosophy*
Steven Mailloux, *Department of English*
Alejandro Morales, *Departments of Chicano/Latino Studies and Spanish*
Martin Schwab, *Departments of Philosophy and Comparative Literature*
Victoria Silver, *Department of English*
Preston Kyle Stanford, *Department of Logic and Philosophy of Science*
Brook Thomas, *Department of English*

The minor in Humanities and Law is comprised of courses in the School of Humanities that UCI graduates have found to be useful in developing skills that prepare them for law-related careers. One set of courses develops skills in critical reading, writing, and analysis that are necessary in dealing with legal issues. Another set presents theoretical and analytical perspectives on ethical, political, and social issues relevant to the law. A final set focuses on specific legal issues from a humanistic perspective. Lower-division requirements primarily develop foundational skills in the first set, whereas upper-division requirements build on these skills by addressing the concerns from the other sets. The minor does not include how-to courses on particular legal practices.

Requirements for the Minor

A. Philosophy 29 or Classics 75.

B. Either one of the following four-course combinations: Humanities 1A-B-C (or the Humanities Core Alternative) and one course from Philosophy 4, 5, or 9 (if not used for the Humanities Core Alternative), or Philosophy 1, 4, and either 5 or 9, plus one course from Philosophy 10, 11, 12, 13, or 9 (if not taken above).

C. Six courses from among a list of quarterly approved courses, at least one each from philosophy, history, and literature or classics. Consult the Humanities and Law Web site (http://www.humanities.uci.edu/humlaw) for currently approved courses.

Students considering a career in law are strongly encouraged to take advantage of other law-related courses offered across the campus and of extracurricular activities such as the Pre-Law Society.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be successfully completed at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Interdisciplinary Minor in Asian Studies

5285 Social Science Plaza B; (949) 824-7521
Dorothy J. Solinger, **Co-Director**

259 Murray F. Krieger Hall; (949) 824-6521
Anne Walthall, **Co-Director**

Participating Faculty

Victoria A. Beard, *Department of Planning, Policy, and Design*
Tom Boellstorff, *Department of Anthropology*
Vinayak Chaturvedi, *Department of History*
Chuansheng Chen, *Departments of Psychology and Social Behavior and of Education*
Chungmoo Choi, *Department of East Asian Languages and Literatures*
Edward Fowler, *Department of East Asian Languages and Literatures*
James Fujii, *Departments of East Asian Languages and Literatures and of Comparative Literature*
Michael A. Fuller, *Department of East Asian Languages and Literatures*
Susan Greenhalgh, *Department of Anthropology*
Qitao Guo, *Department of History*
Hu Ying, *Department of East Asian Languages and Literatures*
Martin W. Huang, *Department of East Asian Languages and Literatures*
Kyung Hyun Kim, *Departments of East Asian Languages and Literatures and of Film and Media Studies*
Susan B. Klein, *Department of East Asian Languages and Literatures*
Karen Leonard, *Department of Anthropology*
Alka Patel, *Department of Art History*
Kenneth L. Pomeranz, *Department of History*
Kamal Sadiq, *Department of Political Science*
David A. Smith, *Department of Sociology*
Dorothy J. Solinger, *Department of Political Science*
Yang Su, *Department of Sociology*
Serk Bae Suh, *Department of East Asian Languages and Literatures*
Robert Uriu, *Department of Political Science*
Anne Walthall, *Departments of History and of East Asian Languages and Literatures*
Jeffrey Wasserstrom, *Department of History*
Wang Feng, *Department of Sociology*
Bert Winther-Tamaki, *Department of Art History*
Roberta Wue, *Department of Art History*
Mei Zhan, *Department of Anthropology*

The countries and cultures of Asia are significant participants in the world community. They present compellingly different models for social organization, historical development, and cultural commitments. The many countries of this large and complex region provide challenges and opportunities whether one plans to be a scholar, a business person, or a diplomat. The minor in Asian Studies draws upon the expertise of faculty throughout UCI to create opportunities for students to explore Asian topics in a variety of fields, to develop advanced language skills, and to acquire a broader perspective as they apply the disciplinary training of their major field to effective and informed studies of Asian subjects. The minor is open to all UCI students.

Requirements for the Minor

Students choose one country and language of specialization. At the present the Asian Studies minor focuses on China, Japan, or Korea.

Requirements for the minor are met by taking eight courses (of which no more than four may be lower-division) as specified below.

A. One course selected from History 170D, 170E, 170F (Premodern East Asia, East Asia 1600–1895, East Asia Since 1895). Students may petition to substitute other History courses that focus on Asia.

B. Three quarters of course work in one Asian language of specialization beyond the first-year level. Approved courses are

1. Second-, third-or fourth-year language: Chinese 2A-B-C, 3A-B-C, 101A, B, C; Japanese 2A-B-C, 3A-B-C, 101A, B, C; Korean 2A-B-C, 3A-B-C, 101A, B, C; other sequences in Asian languages as available. NOTE: These courses require placement examinations given by the Department of East Asian Languages and Literatures. Students who, for example, place out of Chinese 2B would then take Chinese 2C, 3A-B to meet the requirement.
2. Classical Chinese (Chinese 100A-B-C), *or* Classical Japanese (100A-B) plus a third quarter of Japanese language study.
3. Literature courses taught in the original language: Chinese 115, Japanese 115, Korean 115, or graduate seminars. NOTE: These courses have a prerequisite of completion of the fourth-year language sequence or its equivalent.

C. Four additional courses selected from an approved list available in the Asian Studies Office in 152 Humanities Instructional Building and online at http://www.humanities.uci.edu/asianstudies/.

1. At least two of these courses must be taken in one (or more) department(s) other than the student's major department.
2. The courses must cover at least two different Asian countries, one of which is the country of language specialization.
3. No more than two of the courses may be lower-division (and only one may be lower-division if any combination of 2A-B-C/3A-B-C is used for the language required above).

NOTE: A maximum overlap of two courses is permitted between this minor and a student's major.

Residence Requirement for the Minor: Four upper-division (or graduate) courses must be successfully completed at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Interdisciplinary Minor in Jewish Studies

322 Humanities Hall; (949) 824-7244
Jacobo Sefamí, **Director**

Participating Faculty

Marc Baer, Ph.D. University of Chicago, *Associate Professor of History* (history of religion, Ottoman and Islamic history, Middle-East history, ethnicity and identity, gender, Jews of the Ottoman Empire)

Erwin Chemerinsky, J.D. Harvard Law School, *Dean of the School of Law and UCI Distinguished Professor of Law and Political Science* (Constitutional law, federal practice, civil rights and civil liberties, appellate ligation)

James Chiampi, Ph.D. Yale University, *Professor of Italian* (Italian Renaissance literature, Dante, Italian-Jewish literature)

Touraj Daryaee, Ph.D. University of California, Los Angeles, *Associate Director, Dr. Samuel M. Jordan Center for Persian Studies and Culture, Associate Professor of History, and Howard Baskerville Professor in the History of Iran and the Persianate World* (ancient and medieval Iranian history, Iranian languages and literature, Zoroastrianism, numismatics, world history)

Kai Evers, Ph.D. Duke University, *Assistant Professor of German* (twentieth-century literature, film, and theory, Holocaust)

Sarah Farmer, Ph.D. University of California, Berkeley, *Associate Professor of History* (Modern French history, twentieth-century Europe, political and cultural history, World War II and Holocaust in France)

Alexander Gelley, Ph.D. Yale University, *Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel, critical theory, German Jewish literature and culture)

James B. Given, Ph.D. Stanford University, *Professor of History* (Medieval Europe, social and political history, heresy, Inquisition, medieval anti-semitism)

David Theo Goldberg, Ph.D. City University of New York, *Director of the UC Humanities Research Institute and Professor of Comparative Literature and of Criminality, Law, and Society* (South Africa, race and racism, social and political theory, legal studies, Jewish identity)

Sara Goodman, Ph.D. Georgetown University, *Assistant Professor of Political Science* (citizenship, immigration, integration, Western Europe, ethnicity)

Ruth Kluger, Ph.D. University of California, Berkeley, *Professor Emerita of German* (Kleist, nineteenth-century literature, Stifter, Holocaust literature)

Glenn S. Levine, Ph.D. University of Texas, Austin, *Faculty Director of the Center for International Education, German Language Program Director, and Associate Professor of German* (applied linguistics, theoretical linguistics, foreign language pedagogy, German-Jewish literature, Yiddish language and literature)

Mark A. LeVine, Ph.D. New York University, *Professor of History* (Middle East history, cultures and religions of the modern Middle East, Palestine and Israel)

Julia Reinhard Lupton, Ph.D. Yale University, *UCI Chancellor's Fellow, Director of the Humanities Core Course, and Professor of English, Comparative Literature, and Education* (Shakespeare, Renaissance literature, religious studies, public sphere, Renaissance literature and the Jews)

Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese* (Latin American novel and short story, Hebrew language, Jews and Latin American literature)

Robert G. Moeller, Ph.D. University of California, Berkeley, *Department Chair and Professor of History* (modern Germany, European women, Holocaust in post-World War II Germany)

Kristen R. Monroe, Ph.D. University of Chicago, *Director of the Interdisciplinary Center for the Scientific Study of Ethics and Morality and Professor of Political Science* (political theory, political psychology, political economy, rationality, altruism, genocide)

Maria C. Pantelia, Ph.D. Ohio State University, *Professor of Classics and Director, Thesaurus Linguae Graecae®* (Greek epic, Hellenistic poetry, digital technologies in the humanities, ancient Judaic literature)

James I. Porter, Ph.D. University of California, Berkeley, *Professor of Classics and Comparative Literature* (philosophy, literary and cultural criticism and aesthetics, history of the classical disciplines, reception of Homer, Jewish thought and anti-Semitism)

Patricia Seed Ph.D. University of Wisconsin, Madison, *Professor of History* (modern dance, the history of cartography, Iberian Jewish science)

Jacobo Sefamí, Ph.D. University of Texas at Austin, *Director of the Jewish Studies Minor and Professor of Spanish* (modern and contemporary Latin American poetry, Mexican literature, Spanish American literature, Latin American Jewish literature)

Irene Tucker, Ph.D. University of California, Berkeley, *Associate Professor of English* (Victorian literature, history and theory of the novel, history of medicine and technology, Hebrew literature, literature and philosophy)

The minor in Jewish Studies is an interdisciplinary program which introduces students to the many facets of Jewish cultures through the study of the history, philosophy, art, literature, languages, and social and political institutions of Jews from ancient to modern times. The minor provides students with grounding in areas of fundamental importance to the Humanities and Social Sciences, supporting and enriching the students' majors. The minor may be taken in tandem with any major and prepares students for graduate programs in Jewish Studies. The interdisciplinary approach of Jewish studies exposes students to a wide range of disciplines, and like other established liberal arts fields, provides a foundation for pursuing a range of careers.

Requirements for the Minor

A. History 18A.

B. At least four upper-division courses from the following list: German 104 (Linguistic Introduction to Yiddish); German 130 (Twentieth-Century German-Jewish Literature and Culture); German 150 (Holocaust Literature and Film); German 150 (History and Culture of the Jews); History 122B (Hitler and the Germans); History 130A (Jewish History from Ancient to Early Modern); History 130B (Modern Jewish History); History 130C (Jews and Muslims); History 132 (Israel and Palestine); History 183 (Imagining the Future: Israel and Palestine in the Twenty-First Century); History 190 (Medieval Heresy); History 190

(Comparative Religious Conversion); History 190 (The Holocaust); History 190 (Jerusalem: Religion and Conflict in Middle Eastern History); Spanish 110A (Medieval Iberia: Christians, Muslims, and Jews in Medieval Spain).

C. Three additional courses from the list above and which may include Hebrew 1A-B-C, Hebrew 2A-B-C, Religious Studies 5A.

Students should consult an academic counselor or check the program Web site (http://www.humanities.uci.edu/jewishstudies/) for currently approved courses. With the approval of the Director, other relevant courses may satisfy the requirements for the minor.

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Interdisciplinary Minor in Latin American and Caribbean Studies

143 Humanities Instructional Building; (949) 824-5132

Faculty

Ana María Amar Sánchez, *Department of Spanish and Portuguese*
Stanley Bailey, *Department of Sociology*
Frank D. Bean, *Departments of Sociology and Economics*
Carolyn P. Boyd, *Department of History*
Susan K. Brown, *Department of Sociology*
Juan Bruce-Novoa, *Department of Spanish and Portuguese*
Alison Brysk, *Department of Political Science*
Frank Cancian, *Department of Anthropology*
Leo Chávez, *Department of Anthropology*
Raúl Fernández, *Department of Chicano/Latino Studies*
Robert Garfias, *Department of Anthropology*
Lucía Guerra-Cunningham, *Department of Spanish and Portuguese*
Ivette N. Hernández-Torres, *Department of Spanish and Portuguese*
Helen Ingram, *Department of Planning, Policy, and Design*
Winston James, *Department of History*
Adriana M. Johnson, *Department of Comparative Literature*
Rodrigo Lazo, *Department of English*
Horacio Legrás, *Department of Spanish and Portuguese*
William M. Maurer, *Department of Anthropology*
Seymour Menton, *Department of Spanish and Portuguese*
Michael J. Montoya, *Departments of Anthropology and Chicano/Latino Studies*
Alejandro Morales, *Departments of Chicano/Latino Studies and of Spanish and Portuguese*
Rachel O'Toole, *Department of History*
Jaime E. Rodríguez, *Department of History*
John Carlos Rowe, *Department of Comparative Literature*
Vicki L. Ruiz, *Departments of History and Chicano/Latino Studies*
Rubén Rumbaut, *Department of Sociology*
Nancy Lee Ruyter, *Department of Dance*
Armin Schwegler, *Department of Spanish and Portuguese*
Patricia Seed, *Department of History*
Jacobo Sefamí, *Department of Spanish and Portuguese*
Caesar D. Sereseres, *Department of Political Science*
Etel Solingen, *Department of Political Science*
Luis Suárez-Villa, *Department of Planning, Policy, and Design*
Heidi Tinsman, *Department of History*
Steven C. Topik, *Department of History*
Luis P. Villarreal, *Department of Molecular Biology and Biochemistry*
Roberto Villaverde, *Department of Civil and Environmental Engineering*
Juan Villegas, *Department of Spanish and Portuguese*
Douglas R. White, *Department of Anthropology*

The minor in Latin American and Caribbean Studies is an interdisciplinary curriculum designed to provide for an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, social ecology, health, folk medicine, and creative (art, dance, drama, music) accomplishments. The minor is open to all UCI students.

Requirements for the Minor

Spanish 2A-B-C (Intermediate Spanish) or Portuguese 120A, B, C (may not overlap with other minor requirements), or demonstrated equivalent knowledge of Spanish or Portuguese.

Humanities 100 (Latin America and the Caribbean).

One course in Latin American literature (Spanish-American or Luso-Brazilian) selected from Comparative Literature 100A, 132, 144 (when topic is on Latin American literature and history); Spanish 101B (Introductory Studies in Latin American Literature and Cultures), 130A (Latin American Colonial Literature and Cultures), 130B (Latin American Literature of the Nineteenth Century), 130C (Latin American Literature of the Twentieth Century), 150 (Literature in Translation), 160 (Topics in Luso-Hispanic Film Studies, when topic is on Latin America), 186 (Selected Topics in Latin American Literature and Culture); Portuguese 120A, B, C (Introduction to Portuguese and Brazilian Literature), 121 (Topics in Luso-Brazilian Literature), 190 (Individual Studies).

One course in Latin American history selected from History 161A (Indian and Colonial Societies in Mexico), 161C (Twentieth-Century Mexico), 162 (Brazil), 169 (Topics in Latin American History), 190 (Colloquium, when topic is on Latin America).

One course in Latin American social sciences selected from Anthropology 125A (Economic Anthropology), 125X (Transnational Migration), 162A (Peoples and Cultures of Latin America); Political Science 153A (Latin American Politics); Social Science 172F (Latin American and Latino Cultures I).

One course in Chicano studies selected from Chicano/Latino Studies 111A (Critical Issues in Chicano Studies); Political Science 126A (Mexican-Americans and Politics); Spanish 110C (U.S. Latino Literature and Cultures), 140A, B (Chicano Literature), 142 (Chicano Culture), 186 (Selected Topics in Latin American Literature and Culture, when topic is on Chicano literature).

Four courses in Latin American studies selected from any of the courses listed above in the literature, history, and social sciences requirements; Spanish 110A (Peninsular Literature and Cultures, when topic is on Latin America), 110B (Latin American Literature and Cultures); Anthropology 121J (Urban Anthropology, when the topic is on Latin American countries); Biological Sciences 199 (Independent Study in Biological Sciences Research, when topic is medicinal biology and herbs in Mexico).

With the approval of the director, other relevant courses also may satisfy the requirements for the minor.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Additional Interdisciplinary Minors

Information about the following two minors in available in the School of Social Sciences section of the *Catalogue.*

The **minor in Conflict Resolution** provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels.

The **minor in Chicano/Latino Studies** is designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments in the Chicano/Latino communities.

Information about the following minors is available in the Interdisciplinary Studies section of the *Catalogue.*

The **minor in Civic and Community Engagement** seeks to provide students with the knowledge, skills, attitudes, and values to engage as citizens and active community members in the twenty-first century. The minor is distinguished both by *what* students learn, and by *how* they learn it.

The **minor in Global Sustainability** trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

The **minor in the History and Philosophy of Science** explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

The **minor in Native American Studies** focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

Concentration in Medieval Studies

174 Murray Krieger Hall; (949) 824-5441
Elizabeth Allen, **Coordinator**

The concentration in Medieval Studies allows undergraduate students in the Schools of Humanities and the Arts to augment their major by completing a coherent program of courses in the area of medieval studies. The concentration is available to students in any major offered by the Schools and is particularly well-suited to majors in English, Comparative Literature, European Studies, History, Philosophy, and the Arts.

Students in the concentration must complete at least two quarters of Humanities 110, the Core Course in Medieval Studies. These courses are interdisciplinary, examinations of such topics as Medieval Cities, The Dark Ages, Medieval Liturgy and Theater, Medieval Women, and The Plague. In addition, students must complete at least four additional courses in medieval studies selected from an approved quarterly list. One of these four courses may be satisfied by completing a senior essay in some area of medieval studies.

Academic English/English as a Second Language Program

200 Humanities Instructional Building; (949) 824-6781

Robin Scarcella, Ph.D. University of Southern California, *Director of the Academic English/English as a Second Language Program and Professor of Academic English and English as a Second Language, Humanities, and Education* (linguistics, language development emphasis)

Humanities 20A-B-C-D through 29 are for students who have been admitted to UCI and whose scores on the Academic English placement test indicate the need for additional work in Academic English/English as a second language. Students may receive up to 12 baccalaureate credits for AE/ESL course work. Students may receive workload credit for courses taken beyond this 12-unit limit but will not receive additional credits applicable to the bachelor's degree.

Humanities 20A-B-C-D Essentials of Academic Writing (4-4-4-4). Grammar, sentence structure, paragraph and essay organization of formal written English. Pass/Not Pass only. Corequisite: Humanities 22A, if indicated by results of the AE/ESL Placement Test. Prerequisite: AE/ESL Placement Test.

Humanities 22A Essentials of Academic English Reading and Vocabulary (2). Intensive reading exercises with occasional practice in extensive reading, focusing on comprehension, development of vocabulary, syntax, rhetorical features, reading strategies, and study skills. Pass/Not Pass only. Corequisite: concurrent enrollment with Humanities 20A-B-C-D if indicated by results of AE/ESL Placement Test. Prerequisite: AE/ESL Placement Test.

Humanities 22B ESL Reading and Vocabulary (2). Extensive reading and discussion with emphasis on journal articles, textbook chapters, notetaking, and the interpretation of charts, diagrams, tables, and figures. Primarily for graduate students. Pass/Not Pass only. Prerequisite: consent of instructor.

Humanities 23A ESL Basic Pronunciation I (2). Designed for international graduate students with basic oral English communication skills. Listening and speaking skills in five fundamental areas: pronunciation, intonation, word stress, listening comprehension, and informal campus communication. Presentations of personal experiences and reports on campus services. Pass/Not Pass only. May be taken for credit three times. Formerly Humanities 21A.

Humanities 23B ESL Intermediate Conversation II (2). Designed for international graduate students with intermediate oral communication skills. Further development of listening and speaking skills: review of English sounds, sentence stress, and rhythm. Oral reports, debates, and reports on graphs and surveys. Prerequisite: Humanities 23A or consent of instructor. Pass/Not Pass only. May be taken for credit three times.

Humanities 23C ESL Advanced Communication III (2). Designed for international graduate students with advanced communication skills. Further development of listening and speaking skills: review of minimal pairs, consonant blends, intonation, stress and rhythm. Oral presentations on graphs, syllabi, academic terms, and a video presentation on academic work. Prerequisite: Humanities 23A or 23B, or consent of instructor. Pass/Not Pass only. May be taken for credit three times. Formerly Humanities 21B.

Humanities 24 ESL International TA Workshop (2). Designed for advanced-level international students preparing to be teaching assistants. Extensive practice in oral and written communication skills associated with teaching introductory-level college courses and participating in academic presentations and discussions. Review and analysis of language problems. Prerequisite: Humanities 23B or 23C, or consent of instructor. Pass/Not Pass only. May be taken for credit three times.

Humanities 29 Special Topics in ESL (1 to 2). Directed and individualized work in English as a second language not covered in the Humanities 20, 21, 22 sequence. Pass/Not Pass only. Prerequisite: consent of AE/ESL Director.

Humanities 139 Advanced Academic Writing Across the Curriculum (4). Designed for transfer students who speak English and another or other languages at home and who experienced English language difficulties in a college composition course. Focuses on developing academic reading and writing skills including essay content, organization, vocabulary, and grammar. Academic content also covered. Prerequisite: satisfactory completion of the lower-division writing requirement.

Courses in Humanities

(Schedule of Classes **designation: Human)**

LOWER-DIVISION

The following set of courses has no necessary relation to the undergraduate interdisciplinary major in Humanities. Most of the courses are open to any UCI student. Humanities 1A-B-C is required for the major in Humanities, as it is a requirement of any student majoring in the School of Humanities. Also, Humanities 199 is required of any undergraduate in the School who is approved to complete an interdisciplinary major in Humanities.

1A-B-C The Humanities Core Course (8-8-8) F, W, S. This course is restricted to students who are beginning their first year of college-level work. Each year it deals with problems of concern to the humanistic disciplines including interdisciplinary perspectives on major themes in history, literature, and philosophy. Focuses on major texts and works of art from a range of different cultural traditions. A writing program is integral to the course and counts for half the grade each quarter. Students are taught to think, speak, and write clearly about the issues raised in the texts and addressed in lectures. Students held for the UC Entry Level Writing requirement will earn an additional two units of workload credit, and *must* take the course for a letter grade. 1A is prerequisite to 1B, and 1B is prerequisite to 1C. (1A-B-C: **I, IV;** 1C: **VII)**

7 Introduction to Humanities (1). Introduces students to UCI School of Humanities majors through weekly speakers from departments and programs representing their field of study. Students will gain an understanding of UCI Humanities majors, fields of study, research, and career opportunities. Prerequisite: lower-division standing or consent of instructor. Pass/Not Pass only.

10 Masterpieces of Literature (4). Students closely read major works of world literature that are significant (1) in their own right, (2) for a specific literary tradition, and (3) because of their reception in other cultural contexts. Literature written in English and English translation. May be repeated for credit as topics vary. **(IV, VIII)**

UPPER-DIVISION

100 Latin America and the Caribbean (4). This foundational course in Latin American and Caribbean studies begins with discussions of the social, cultural, economic, and political process tracing the events from Pre-Conquest to present which have circumscribed the insertion of this region into the world economy. **(VIII)**

110 Core Course in Medieval Studies (4). A seminar in selected topics in medieval studies. Interdisciplinary, ordinarily team-taught. Open to all students, and designed especially for those electing the concentration in Medieval Studies. May be taken for credit four times as topic varies. Same as Art History 114 when topic is appropriate.

H120 Honors Proseminar (4) F, W, S. Interdisciplinary Honors courses organized each year around a single topic or problem designed to compare and contrast modes of analysis in history, literary studies, and philosophy. Required of participants in the Humanities Honors Program. Prerequisites: consent of instructor and the Humanities Honors Program Committee. May be taken three times for credit as topics vary.

H140 Senior Honors Seminar (4) F. Directed by the Humanities Honors Thesis Advisor and required of students in the Humanities Honors program and Humanities majors in the Campuswide Honors Program. Designed to facilitate the exchange of ideas and research strategies among Honors students and to begin the process of writing the senior honors thesis. Prerequisites: senior standing and consent of the Honors Program Committee.

H141 Senior Honors Thesis (4) W. Directed independent research required of participants in the Humanities Honors Program and Humanities majors in the Campuswide Honors Program. Prerequisites: Humanities H140; consent of Honors Program Committee.

H142 Senior Honors Colloquium (4) S. Completion, presentation, and discussion of Senior Honors Theses. Satisfies upper-division writing requirement. Prerequisites: Humanities H141 and consent of Humanities Honors Program Committee.

149 Rhetoric and Public Speech (4) F. A course in public speaking as rhetorical practice. Key concepts include situation, audience, public, argument, persuasion, style, and ethics. Includes analysis of significant speeches by public figures from a range of social positions, and practice in composing and delivering speeches. Prerequisite: satisfactory completion of the lower-division writing requirement.

183A International Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to international studies. May be taken for credit four times. Same as International Studies 183A, Social Ecology 183A, and Social Science 183A.

183B Senior Seminar in Mediation (4). Students develop mediation skills and refine knowledge in the practice and theory of conflict resolution. Students who complete this course may serve as mediators in the Campus Mediation Program. Course is a prerequisite to completing Independent Study as an intern practicing mediation with the OC Human Relations Commission in small claims court. Prerequisite: upper-division standing. Same as Social Ecology 183B and Social Science 183B.

183C Senior Seminar in Conflict Resolution (4). Continuation of Humanities 183B. Students write a senior research paper. Prerequisite: Humanities 183B and satisfaction of the lower-division writing requirement. Same as Social Ecology 183C and Social Science 183C.

195 Humanities Out There (H.O.T) Practicum (0 to 2) F, W, S. H.O.T. sponsors five-week workshops on selected topics in the humanities. Each workshop sends out a team of undergraduates to a K–12 classroom to develop college skills for Santa Ana students. Requirements: five training sessions; five tutoring sessions; two electronic journals; short paper. Pass/Not Pass only. May be taken for credit for a total of eight units. **(IX)**

197 Individual Field Study (varying credit) F, W, S. Individually arranged field study. Prerequisite: consent of instructor.

198 Directed Group Study (1 to 4) F, W, S. Directed group study on special topics. Prerequisite: consent of instructor. Pass/Not Pass only. May be repeated for credit as topics vary.

199 Directed Research (1 to 4) F, W, S. Directed research for senior Humanities students. Prerequisite: senior standing and consent of instructor. May be repeated for credit as topics vary.

GRADUATE

Graduate courses in Humanities are under the direction of the School's Associate Dean for Graduate Study and are designed for all graduate students in the School of Humanities.

Humanities 200 and 220 introduce study in various disciplinary areas, either to students planning a degree in history or one of the literature departments or to those seeking familiarity with disciplines other than their own.

200A, B, C History and Theory (4, 4, 4) F, W, S. Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Same as History 200A, B, C.

220A, B Studies in Literary Theory and Its History (4, 4) F, W. Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists. Restricted to graduate students only. Same as English CR 220A, B.

260A-B-C Critical Theory Workshop (4) F, W, S. A year-long Critical Theory Workshop, conducted by a team of instructors, conceived as a reading group, and developed with the input of all participants, where significant texts are discussed and analyzed in class.

270 Advanced Critical Theory (4) F, W, S. Seminars on various topics in critical theory. Students should have taken introductory courses before enrolling in these seminars. May be repeated for credit as topics vary.

298 Group Study (4) F, W, S. Open to four or more students. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

399 University Teaching (4) F, W, S. Limited to Teaching Associates in the Humanities Core Course. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

Humanities Language Learning Program

Glenn Levine, **Director**

The learning of languages other than English is a crucial component of humanistic inquiry and essential to fostering global literacy in students and to internationalizing the University of California, Irvine. The mission of the Humanities Language Learning Program (HLLP) is to support the learning and teaching of languages other than English on the UC Irvine campus, provide instruction in languages not associated with undergraduate or graduate degree programs, foster intellectual and pedagogical connections between the fields of applied linguistics and the humanities, and provide local and national leadership in raising the profile and prominence of language learning as part of a university education in a rapidly changing, globally interconnected world.

The following languages are offered through the HLLP: Arabic, Persian, Hebrew, Russian (see also Program in Russian Studies), and Vietnamese.

Language Other Than English Placement and Progression: See page 253.

Arabic 1A-B-C Fundamentals of Arabic (5-5-5) F, W, S, Summer. Uses real world texts (newspapers, poetry, video, and literary texts) to provide students with a firm foundation in the orthography, grammar, syntax, and vocabulary of written and spoken Modern Standard Arabic. Introduces students to Arab world cultures. Prerequisites: for 1B, Arabic 1A with a grade of C or better or the equivalent; for 1C: Arabic 1B with a grade of C or better or the equivalent. (1C: **VI**)

Arabic S1AB-BC Fundamentals of Arabic (7.5-7.5) Summer. Using the latest pedagogical materials as well as real-world texts (newspapers, poetry, literatures), provides students with a firm foundation in the orthography, grammar, syntax, and vocabulary of written and spoken Modern Standard Arabic. Course may also be delivered online. Prerequisites: for S1BC, Arabic 1B or S1AB with a grade of C or better, or the equivalent. For equivalencies consult with the instructor (S1BC: **VI**)

Arabic 2A-B-C Intermediate Arabic Language and Culture (4-4-4) F, W, S. Designed for students who are interested in advancing with their Arabic language skills. Students learn the standard Arabic writing system and grammar. Facilitates intermediate-level reading, writing, and speaking skills. Fosters college-level cultural literacy. Prerequisites: for 2A, Arabic 1C with a grade of C or better, placement into 2A, or equivalent; for 2B: Arabic 2A with a grade of C or better, placement into 2B, or equivalent; for 2C: Arabic 2B with a grade of C or better, placement into 2C, or equivalent. **(VIII)**

Arabic S2AB-BC Intermediate Arabic Language and Culture (6-6) Summer. Second-year Arabic in a time-intensive form. Equivalent to Arabic 2A-B-C during academic year. For description see Arabic 2A-B-C. Prerequisites: for S2AB, Arabic 1C with a grade of C or better or equivalent; for S2BC: Arabic S2AB with a grade of C or better or equivalent. **(VIII)**

Arabic 199 Independent Study (4) F, W, S. Research paper required. Prerequisite: consent of instructor.

Hebrew 1A-B-C Fundamentals of Hebrew (5-5-5) F, W, S. Introduction to modern spoken and written Israeli Hebrew. Students learn the Hebrew writing system and the basics of Hebrew grammar through the latest pedagogical materials as well as real-world texts. Topics in Jewish culture and Biblical Hebrew are included. Prerequisites: for 1B, Hebrew 1A with a grade of C or better or the equivalent; for 1C: Hebrew 1B with a grade of C or better or the equivalent (1C: **VI**)

Hebrew 2A-B-C Intermediate Hebrew (4-4-4) F, W, S. Emphasizes development of meaningful communicative skills in Hebrew for the purposes of interaction with Hebrew speakers and critical study of Hebrew culture. With a learner-centered approach, the courses help students develop reading, writing, speaking, listening, grammatical, and cultural skills. Prerequisite for 2A: Hebrew 1C with a grade of C or better, three years of high school Hebrew, or equivalent; for 2B: Hebrew 2A with a grade of C or better, or equivalent; for 2C: Hebrew 2B with a grade of C or better, or equivalent. **(VIII)**

Hebrew 199 Independent Study (4) F, W, S. Research paper required. Prerequisite: consent of instructor.

Persian 1A-B-C Fundamentals of Persian (5-5-5) F, W, S. Designed for students with little or no exposure to Persian. Students learn the modern writing system and grammar of Persian. Facilitates basic reading, writing, and speaking skills and fosters college-level literacy in Persian culture. Prerequisites: for 1B, Persian 1A; for 1C, Persian 1B. Persian 1A-B-C and Persian S1AB-BC may not both be taken for credit. (1C: **VI**)

Persian S1AB-BC Fundamentals of Persian (7.5-7.5) Summer. First-year Persian in an intensified form. Designed for students with little or no exposure to Persian. Students learn the modern writing system and grammar of Persian. Facilitates basic reading, writing, and speaking skills. Fosters college-level literacy in Persian culture. Prerequisite for S1BC: Persian S1AB or 1B with a grade of C or better. Persian S1AB-BC and 1A-B-C may not both be taken for credit. (S1BC: **VI**)

Persian 2A-B-C Intermediate Persian Language and Culture (4-4-4) F, W, S. Designed for students who are interested in advancing with their Persian language skills. Students learn the standard Persian writing system and grammar. Facilitates intermediate-level reading, writing, and speaking skills. Fosters college-level cultural literacy. Prerequisite for 2A: Persian 1C with a grade of C or better, placement into 2A, or equivalent; for 2B: Persian 2A with a grade of C or better, or placement into 2B, or equivalent; for 2C: Persian 2B with a grade of C or better, or placement into 2C, or equivalent. **(VIII)**

Persian S2AB-BC Intermediate Persian Language and Culture (6-6) Summer. Students learn the modern Persian writing system and grammar. Facilitates intermediate-level reading, writing, and speaking skills. Fosters college-level literacy in Persian culture. Prerequisites: for S2AB, Persian 1C with a grade of C or better, or equivalent; for S2BC: Persian S2AB with a grade of C or better, or equivalent. **(VIII)**

Russian. See the Program in Russian Studies.

Vietnamese 1A-B-C Fundamentals of Vietnamese (5-5-5) F, W, S. Natural approach with emphasis on four fundamental skills of listening, speaking, reading, and writing. Conducted in Vietnamese. Prerequisite for 1B: Vietnamese 1A with a grade of C or better, or equivalent; for 1C: Vietnamese 1B with a grade of C or better, or equivalent, or S1AB with a grade of C or better. (1C: **VI**)

Vietnamese S1AB-BC Fundamental Vietnamese (7.5-7.5) Summer. First-year Vietnamese in intensified form. Intended for students with little or no knowledge of the Vietnamese language. Emphasis is on mastery of the basic language skills of understanding, speaking, reading, and writing. Prerequisite for S1AB: none; for S1BC: S1AB, or two years of high school Vietnamese, or one semester of college-level Vietnamese. Vietnamese S1AB-BC and Vietnamese 1A-B-C may not both be taken for credit. (S1BC: **VI**)

Vietnamese 2A-B-C Intermediate Vietnamese (5-5-5) F, W, S. Designed to develop writing and reading skill as well as communicative skills in authentic situations. Students are introduced to aspects of Vietnamese culture as related to lesson topics. Prerequisite for 2A: Vietnamese 1C or S1BC with a grade of C or better, or equivalent; for 2B: Vietnamese 2A with a grade of C or better, or equivalent; for 2C: Vietnamese 2B with a grade of C or better, or equivalent. Placement test required. **(VIII)**

Vietnamese 3A-B-C Advanced Vietnamese (4-4-4). Focuses on the development of effective speaking, reading, and writing with an emphasis on correct syntax and appropriate word usage in spoken language. Prerequisite: Vietnamese 2C or equivalent. **(VIII)**

Vietnamese 115 Vietnamese Literature: Advanced Texts (4). A reading course for students with near-fluency in reading Vietnamese. Readings may include both literary and more broadly culturally significant works by important writers, but emphasis is literary texts and writings that interpret those texts. Prerequisite: Vietnamese 3C or consent of instructor. May be taken for credit three times as topics vary. **(VIII)**

Vietnamese 143 Linguistic Structure of Vietnamese (4). Detailed analysis of essential grammatical aspects of Vietnamese. Comparison with other languages. Course not designed to teach Vietnamese per se but to study the language from the perspective of theoretical linguistics. Prerequisite: Linguistics 3 or equivalent. Formerly East Asian Languages and Literatures 143.

Vietnamese 150 Vietnamese Literature and Culture in Translation (4). In English. Major works in Vietnamese literature and culture in context. May be repeated for credit as topics vary. **(VIII)**

Ph.D. with Interdisciplinary Emphasis in Humanities

Graduate students enrolled in Ph.D. programs in the School of Humanities may elect an interdisciplinary modification of their major degree program with the permission of the departments and/or programs concerned. Such students would do 60 percent of their graduate work in the Ph.D. program in which they are already enrolled and 40 percent in another Ph.D. program in the School of Humanities. Those interested in an interdisciplinary degree should contact the Associate Dean for Graduate Study and the graduate advisors in both departments in which they wish to pursue their studies.

Emphasis in Critical Theory

179 Humanities Instructional Building; (949) 824-6720
http://www.hnet.uci.edu/cte/

Participating Faculty

Ackbar Abbas, *Departments of Comparative Literature and of Film and Media Studies*
Dina Al-Kassim, *Department of Comparative Literature*
Luis F. Avilés, *Department of Spanish and Portuguese*
Etienne Balibar, *Department of French and Italian*
Stephen Barker, *Department of Drama*
Ermanno Bencivenga, *Department of Philosophy*
Juan Bruce-Novoa, *Department of Spanish and Portuguese*
Ellen S. Burt, *Departments of French and Italian and of Comparative Literature*
David Carroll, *Department of French and Italian*
Juli Carson, *Department of Studio Art*
Vinayak Chaturvedi, *Department of History*
Chungmoo Choi, *Department of East Asian Languages and Literatures*
Michael P. Clark, *Department of English*
Suzanne Gearhart, *Department of French and Italian*
Alexander Gelley, *Department of Comparative Literature*

David Theo Goldberg, *Departments of Comparative Literature and of Criminology, Law and Society*
Daniel M. Gross, *Department of English*
Lucía Guerra-Cunningham, *Department of Spanish and Portuguese*
James D. Herbert, *Department of Art History*
Laura H. Y. Kang, *Departments of Women's Studies and Comparative Literature*
Kyung Hyun Kim, *Departments of East Asian Languages and Literatures and of Film and Media Studies*
Felicidad "Bliss" Cua Lim, *Department of Film and Media Studies*
Julia Reinhard Lupton, *Departments of English, Comparative Literature, and Education*
Steven Mailloux, *Department of English*
William M. Maurer, *Department of Anthropology*
J. Hillis Miller, *Departments of Comparative Literature and English*
Yong Soon Min, *Department of Studio Art*
Carrie J. Noland, *Department of French and Italian*
Margot Norris, *Departments of English and Comparative Literature*
Laura O'Connor, *Departments of English and Comparative Literature*
David T. Pan, *Department of German*
Kavita Philip, *Department of Women's Studies*
Mark S. Poster, *Departments of Film and Media Studies and History*
R. Radhakrishnan, *Departments of English and Comparative Literature*
Fatimah Tobing Rony, *Department of Film and Media Studies*
Annette Schlichter, *Department of Comparative Literature*
Gabriele Schwab, *Department of Comparative Literature*
Martin Schwab, *Departments of Philosophy and Comparative Literature*
Jared Sexton, *Department of Film and Media Studies and Program in African American Studies*
David W. Smith, *Department of Philosophy*
John H. Smith, *Departments of German and Comparative Literature*
Sally A. Stein, *Department of Art History*
James Steintrager, *Departments of English and Comparative Literature*
Ulrike Strasser, *Department of History*
Rei Terada, *Department of Comparative Literature*
Brook Thomas, *Department of English*
Andrzej Warminski, *Department of English*

An emphasis in Critical Theory, under the supervision of the Committee on Critical Theory, is available for doctoral students in all departments at UCI upon approval of the student's faculty advisor or associate dean in accordance with departmental policy. Ph.D. students may, with Committee approval, complete the emphasis in addition to the degree requirements of their graduate program. Although there is no change in the existing Ph.D. program requirements or procedures, if the student wishes to have a letter (signed by the Dean and by the Director of Critical Theory) testifying that the student has satisfactorily added this theoretical dimension to the graduate program, then additional requirements must be met. Critical theory at UCI is understood in the broad sense as the study of the shared assumptions, problems, and commitments of the various discourses in the humanities. The faculty regards critical theory not as an adjunct to the study of one of the traditional humanistic disciplines but as a necessary context for the study of any humanistic discipline.

Admission to the emphasis may be granted by the Critical Theory Committee in response to the student's petition. The petition normally is submitted by the middle of the second year of graduate study, after completion of the Critical Theory Workshop, and upon the recommendation of the Workshop's instructor or a faculty representative of the student's department.

Requirements: (1) a three-quarter Critical Theory Workshop, conducted preferably by a team of instructors, conceived as a reading group, and developed with the input of all participants, where significant texts are discussed and analyzed in class. No term papers are required, and the course is graded Satisfactory/Unsatisfactory only. Students receive credit for this course only in the spring quarter. For the first two quarters, the course is 0 units with IP grading; (2) three Humanities 270 courses offered under the supervision of the Committee. At least three such courses will be offered each quarter; (3) participation in two mini-seminars (six–eight hours) offered by visiting scholars (and sponsored by the Committee) on the visiting scholar's ongoing research; and (4) a dissertation that reflects the students' preparation in critical theory; alternatively, a research paper written under the guidance of one or more of the Emphasis faculty and submitted to the Director.

DEPARTMENT OF PHILOSOPHY

220 Humanities Office Building II; (949) 824-6525
E-mail: philos@uci.edu
David W. Smith, **Department Chair**

Faculty

Ermanno Bencivenga, Ph.D. University of Toronto, *Professor of Philosophy* (logic, history of philosophy, philosophy of language)
Sven Bernecker, Ph.D. Stanford University, *Professor of Philosophy* (epistemology, contemporary philosophy of mind)
M. Oreste Fiocco, Ph.D. University of California, Santa Barbara, *Assistant Professor of Philosophy* (metaphysics, epistemology, philosophy of language, ethics)
Margaret Gilbert, D. Phil. Oxford University, *Professor of Philosophy and Abraham I. Melden Chair in Moral Philosophy* (moral and political philosophy, philosophy of social science, social ontology, and collective intentionality)
Sean Greenberg, Ph.D. Harvard University, *Assistant Professor of Philosophy* (history of Early modern philosophy)
Aaron James, Ph.D. Harvard University, *Associate Professor of Philosophy* (ethics, political philosophy)
S. Nicholas Jolley, Ph.D. Cambridge University, *Professor Emeritus of Philosophy* (early modern philosophy, political philosophy)
Bonnie Kent, Ph.D. Columbia University, *Professor of Philosophy* (ethics, medieval philosophy)
J. Karel Lambert, Ph.D. Michigan State University, *Professor Emeritus of Philosophy* (logic, philosophy of science, metaphysics)
Alan Nelson, Ph.D. University of Illinois at Chicago, *Professor Emeritus of Philosophy* (history of philosophy, philosophy of science)
Casey Perin, Ph.D. University of California, Berkeley, *Associate Professor of Philosophy* (ancient philosophy, epistemology, seventeenth- and eighteenth-century philosophy)
Gerasimos Santas, Ph.D. Cornell University, *Professor Emeritus of Philosophy* (ancient philosophy, history of philosophy, ethics)
Martin Schwab, Ph.D. University of Bielefeld, *Director of the Minor in Humanities and Law and Professor of Philosophy and Comparative Literature* (nineteenth- and twentieth-century continental philosophy)
David W. Smith, Ph.D. Stanford University, *Department Chair and Professor of Philosophy* (phenomenology, Husserl, ontology, philosophy of mind)
Nicholas White, Ph.D. Harvard University, *Professor Emeritus of Philosophy and Classics* (Greek philosophy, ethics, epistemology)
Peter Woodruff, Ph.D. University of Pittsburgh, *Professor Emeritus of Philosophy* (philosophy of logic, metaphysics)

Affiliated Faculty

Francisco J. Ayala, Ph.D. Columbia University, *University Professor and Donald Bren Professor of Biological Sciences*
Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and of Logic and Philosophy of Science*
Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences*
Paul Hoffman, Ph.D. University of California, Los Angeles, *Professor of Philosophy, UCR* (history of early modern philosophy, moral psychology, philosophy of mind)
Kristen R. Monroe, Ph.D. University of Chicago, *Professor of Political Science*
Terence Parsons, Ph.D. Stanford University, *Professor of Philosophy, UCLA* (philosophy of language, Medieval philosophy)
Roger N. Walsh, M.B.B.S., Ph.D. University of Queensland, *Professor of Psychiatry and Human Behavior*

Philosophy addresses itself to questions that arise insistently in every area of human experience and in every discipline within the university. Each discipline inevitably poses problems concerning the nature of the standards appropriate to it and the place of its subject matter within the total framework of human knowledge. If we are to understand science or art or literature, or such human

practices as religion and moral thought, we are bound to address ourselves to philosophical issues relating to their nature, the uses of reason appropriate to them, and the contributions they make to our understanding and appreciation of ourselves and the world in which we live.

CAREERS FOR THE PHILOSOPHY MAJOR

The study of argument and the precision and clarity of thought and writing required of Philosophy majors are excellent preparation for a variety of careers. Many undergraduates trained in Philosophy go on to professional schools in medicine, business, or law. The analytical skills developed in Philosophy courses are especially useful in legal education; indeed, many UCI Philosophy graduates have been successful at top law schools. Former Philosophy students have also used their skills to advantage in careers in government, business, teaching, law enforcement, and computer programming. Many Philosophy majors also continue their education at the graduate level, either in philosophy or a related discipline.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

Instruction in philosophy relies essentially upon discussion in which students are active participants. Wherever possible, therefore, classes are limited in size in order to permit sustained interchanges between students and instructor.

Some of the courses offered are of general interest to all students. Others are designed to explore issues that arise in selected and special disciplines such as art or science. The undergraduate advisor should be consulted for advice about courses best suited to the specialized needs of particular students.

The program of course offerings is also designed for those Philosophy majors whose intention may be either to enter some professional school upon graduation (e.g., law) or to engage in graduate work in philosophy.

The faculty encourages Philosophy majors and minors to seriously consider expanding their perspective through an experience of study abroad. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of many worldwide opportunities for study and research. Specifically, those interested in analytic philosophy could consider the EAP programs in the United Kingdom, Canada, Sweden, Australia, and New Zealand, and those interested in Continental philosophy could consider the EAP programs in France, Germany, and Italy. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN PHILOSOPHY

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the Major

A. Philosophy 30 or 104.

B. Philosophy 10, 12, and either 11 or 13.

C. Philosophy 101, 102, 103.

D. Five additional quarter courses from Philosophy 100, 105–199. Students planning to go on to graduate school are strongly advised to take Philosophy 105A and 105B.

Residence Requirement: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

A. Three courses selected from Philosophy 1, 4, 5, 30 *or* from 10, 11, 12, 13, 30 *or* from 20, 21, 22, 23, 30.

B. Four additional upper-division courses selected from Philosophy 100–199. (Philosophy 199 may be taken for four units only.)

Residence Requirement for the Minor: Four upper-division courses must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

Graduate Program

The Ph.D. program in Philosophy is jointly and cooperatively administered by the Department of Philosophy in the School of Humanities and the Department of Logic and Philosophy of Science (LPS) in the School of Social Sciences. The graduate program has two distinct tracks—the Philosophy track and the LPS track—both of which begin from a common core of shared requirements in history of philosophy, logic, ethics, and metaphysics/epistemology. Students are advised to apply to the track whose faculty, areas of specialization, and curriculum most closely correspond to their interests. The Philosophy track is described here. See the Department of Logic and Philosophy of Science for a description of the LPS track.

UCI's Philosophy Department is committed to providing students a well-rounded graduate education, including central areas of contemporary philosophy and a solid foundation in the history of philosophy. While many of our students choose to specialize in the history of Philosophy or the Continental tradition, areas in which the Department enjoys international recognition, students with other areas of specialization are welcome and well represented. Those with interests in mathematics, the natural sciences, or the social sciences are encouraged to take courses in Logic and Philosophy of Science and to include LPS faculty members on their dissertation committees. The cooperative two-track program provides students the benefits of faculty expertise in a host of areas.

Every year the Philosophy Department invites distinguished philosophers from other universities to present their work to faculty and graduate students. Participation in this colloquium series, though not mandatory, contributes significantly to graduate education. Colloquia sponsored by Logic and Philosophy of Science might also be of interest to Philosophy track students.

Every new graduate student is assigned a faculty member whose purpose is to oversee the student's progress through the major requirements for the advanced degree. The student consults with this faculty member each quarter about progress and any administrative or academic difficulties. Each student's overall record is evaluated by the Philosophy Department each year, customarily during the first two weeks of April. When the student has satisfied the residency requirement and the distribution, tools of research, and portfolio requirements, the Candidacy Committee supervises the qualifying examination and the development of a dissertation project, and the subsequent writing of the dissertation itself. The Chair of this committee is the principal person with whom the graduate student will consult on the dissertation.

MASTER OF ARTS IN PHILOSOPHY

There is no list of courses required for the M.A. degree. The M.A. program in Philosophy takes one year at a minimum. The student may elect to follow either of the following routes to the degree: write a thesis on a subject to be chosen in consultation with an advisor and defend the thesis in an oral examination, or satisfy the

logic and portfolio requirements for the Philosophy track. Refer to the Graduate Division section for information on the minimum number of courses required for the M.A. degree.

Advancement to candidacy for the M.A. degree is not automatic, but requires formal application to the Dean of the Graduate Division via the Philosophy Department Office. Application must be made with the recommendation of the Philosophy Department and must take place before the beginning of the quarter in which the student expects to receive the degree.

DOCTOR OF PHILOSOPHY IN PHILOSOPHY

There is no set number of courses required for the Philosophy track, so that work can be tailored to the individual student's needs and interests. However, as a prerequisite for the Ph.D. degree, every student is required to have some experience in teaching.

Normative time to degree in the Philosophy track is seven years for the normally qualified student. Time to advancement to candidacy is four years. Time in candidacy is three years. Maximum time to degree permitted is nine years. A master's degree is not a prerequisite for the Ph.D. The following items are requirements for the Ph.D. degree.

First-Year Seminar. An examination of some standard works in the history of philosophy, value theory, metaphysics, or epistemology; limited to and required of all first-year Philosophy graduate students in the School of Humanities.

Distribution Requirements. Students are required to take a range of courses designed to expose them to the various historical periods and fields of philosophy. When course offerings are announced, students are notified about which courses can be used to satisfy which requirements. In some cases, the requirement satisfied will ultimately depend on the content of the student's term paper(s).

The Distribution Requirements are:

1. **History.** To satisfy this requirement, students must receive a grade of B or better in at least four courses covering at least three of the following areas: Ancient, Medieval, Modern Empiricism, Modern Rationalism, Kant, Nineteenth Century, and Twentieth Century.
2. **Field.** To satisfy this requirement, students must receive a grade of B or better in two courses in value theory, one course in logic, and one course in metaphysics/epistemology.

These requirements must be completed by the end of the seventh quarter in residence.

Tools of Research. This requirement allows students to pursue the tool which they and their advisors deem most useful for their area of concentration, either a language other than English or some course of study outside philosophy. To satisfy this requirement, a student must pass an examination in a single appropriate language other than English or receive a grade of B or better in each of three appropriate graduate-level courses in a discipline other than philosophy.

The two-hour foreign language examination (administered by the Philosophy Department) requires students to translate, with the aid of a dictionary, passages from one or two philosophical authors. For the second option, courses of study outside philosophy will be approved (by the Philosophy Department Director of Graduate Studies) when they bear on a student's area of philosophical concentration. Though the courses must be in a discipline other than philosophy, they may in fact be taught in the Philosophy Department or the LPS Program (e.g., a course in mathematical logic taught by an LPS faculty member).

This requirement must be completed by the end of the ninth quarter in residence.

The Portfolio. A portfolio is an extended writing sample designed to demonstrate a student's ability (a) to understand, analyze, and evaluate positions and arguments in classical and contemporary philosophical literature, and (b) to formulate and defend an original philosophical thesis. These virtues must be displayed at a level of sophistication that indicates the student's ability to write a Ph.D. dissertation.

The portfolio must be submitted to the Graduate Coordinator at the end of the fourth week of the student's seventh quarter in residence. Portfolios will be evaluated by the entire faculty of the Philosophy Department. (Philosophy track students may request that relevant LPS faculty also be present at the evaluation meeting.)

Prospectus Examination. In preparation for the prospectus examination, students choose a dissertation advisor and a dissertation committee. They consult with their thesis advisor and other appropriate faculty to prepare a reading list on their area of concentration and a brief dissertation proposal with a comprehensive bibliography. The exam is an oral exam and must be completed by the end of the tenth quarter in residence. The prospectus exam is to determine whether the dissertation project is viable and promises results that will fulfill standards expected for a dissertation in the profession.

Candidacy Examination. In preparation for the candidacy examination, students prepare at least a draft chapter of their dissertation and update their prospectus and bibliography in consultation with their dissertation advisor and their dissertation committee. Students apply for candidacy by filing appropriate forms, including a list (devised in consultation with their advisor) of appropriate members for their Candidacy Committee; one of these, the External Examiner, must come from outside the Department of Philosophy. The Committee is then appointed by the Philosophy Department, on behalf of the Dean of the Graduate Division and the Graduate Council, to administer the oral candidacy examination on the prospectus and draft chapter(s) to determine whether or not the student will be approved to continue work on the dissertation.

The Candidacy Examination must be completed by the end of the twelfth quarter in residence. The Philosophy Department Chair, on behalf of the Dean of the Graduate Division and the Graduate Council, then appoints a Doctoral Committee (typically taken from the Candidacy Committee and naturally including the dissertation advisor) to supervise the writing of the dissertation.

Dissertation Defense. Students must defend their dissertation during an oral examination administered by their Doctoral Committee.

THE SALZBURG EXCHANGE PROGRAM

The Department of Philosophy and the Department of Logic and Philosophy of Science jointly administer an Exchange Program with the University of Salzburg. The program has two parts. The Scholarly Exchange provides opportunities for faculty and graduate students in Philosophy and LPS to visit Salzburg and for faculty and graduate students from Salzburg to visit one or the other of the UCI units. The Program also sponsors joint conferences, held alternately in Irvine and in Salzburg; these are co-sponsored by Salzburg and the UCI Interdisciplinary Program in the History and Philosophy of Science.

To be eligible for the Salzburg Exchange, a graduate student must have advanced to candidacy. The selected student spends one semester in Salzburg, usually teaching one course in the general area of the thesis topic. An upper-division course may be taught in English, but lower-division courses must be taught in German. (Some previous visitors have learned serviceable German by attending a Goethe institute during the preceding summer.) Typically, a Salzburg visitor will receive a Salzburg Fellowship intended to cover travel expenses, and a stipend; those who teach while in Salzburg will

also receive a salary intended to cover living expenses (including health and dental insurance).

Application should be made to the Philosophy Department's Salzburg Exchange Director by November 1 and should include a curriculum vita and syllabi for possible courses to be taught. The Director and/or the Philosophy Department Graduate Coordinator should be consulted for further information.

OPTIONAL EMPHASIS IN CRITICAL THEORY

The School of Humanities offers an emphasis in Critical Theory that can be appended to the Philosophy track. A student interested in the emphasis begins by taking the three-quarter Critical Theory Workshop. With the recommendation of a workshop instructor or a Critical Theory faculty member in the Philosophy Department, the student may then apply to the Critical Theory Committee for admission to the emphasis. Emphasis students must complete the following requirements in addition to the usual Philosophy track requirements.

The Critical Theory Workshop. Students must successfully complete the three-quarter Critical Theory Workshop. This sequence is conceived as a reading group, normally conducted by a team of instructors, and developed with the input of all participants. Significant texts are discussed and analyzed in class; no term papers are required. (Students receive 0 units and In-progress grades for the fall and winter quarters; passing students receive 4 units and a Satisfactory grade for the spring quarter.

Advanced Critical Theory Requirement. Students must receive a grade of B or better in three Humanities 270 courses offered under the supervision of the Critical Theory Committee. At least three such courses will be offered each year. With the approval of the Philosophy Department, these courses can be used to satisfy the tools of research requirement.

Mini-Seminar Requirement. Students must participate in two committee-sponsored mini-seminars (six–eight hours each) offered by visiting scholars on their ongoing research.

Research Paper Requirement. Students must complete a research paper under the guidance of a three-member committee, selected in consultation with the Director; at least one member must be from outside of the Philosophy Department. This paper may (but need not) be part of the portfolio or dissertation.

Upon completion of the emphasis requirements, a letter certifying that fact, signed by the Dean of Humanities and the Director of the Critical Theory Emphasis, will be added to the student's dossier.

OPTIONAL EMPHASIS IN FEMINIST STUDIES

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Courses in Philosophy

(Schedule of Classes **designation: Philos)**

LOWER-DIVISION

1 Introduction to Philosophy (4). A selection of philosophical problems, concepts, and methods, e.g., free will and cause and substance, personal identity, the nature of philosophy itself. **(IV)**

4 Introduction to Ethics (4). Selected topics from the history of ethics, e.g., the nature of the good life and the moral justification of conduct. **(IV)**

5 Contemporary Moral Problems (4). Selected moral issues of current interest, e.g., abortion, sexual morality, euthanasia, capital punishment, reverse discrimination, civil disobedience, or violence. **(IV)**

7 Introduction to Existentialism (4). An analysis of themes in phenomenology and existentialism and their philosophical origins, e.g., consciousness, self and other, freedom and individuality. **(IV)**

9 Feminist Moral and Political Philosophy (4). Selected topics in moral and political philosophy analyzed from feminist perspectives, e.g., gender-based differences in moral attitudes and virtues, hidden in traditional accounts of political obligation, and feminism and sexual orientation. Prerequisite: Philosophy 4 recommended. **(IV)**

10 History of Ancient Philosophy (4). Examination of the central philosophical themes developed by the pre-Socratics, Socrates, Plato, Aristotle, the Stoics, the Epicureans, and the Skeptics. **(IV)**

11 History of Medieval Philosophy (4). A study of some of the major theological and philosophical texts from the Medieval period. Philosophy 10 recommended as background. **(IV)**

12 History of Modern Philosophy (4). A study of major developments in western philosophy from Descartes to Kant with readings from Descartes, Leibniz, Locke, Berkeley, Hume, and Kant. Philosophy 10 or 11 recommended as background. **(IV)**

13 History of Contemporary Philosophy (4). A study of recent philosophical developments in Anglo-American and Continental philosophy with readings from such figures as Russell, Moore, Wittgenstein, Quine, Heidegger, and Sartre. Philosophy 12 recommended as background. **(IV)**

20 Introduction to Human Nature (4). Is our nature determined by how we are created or by what we want to be? Attempts to answer these questions by looking at stories of human origins and scientific accounts of human nature. **(IV)**

21 Introduction to Philosophy and Religion (4). What is religion? What is its relation to philosophy? Must one be religious in order to be a moral or good person? In examining these issues, attends to both Eastern and Western traditions and perspectives. **(IV)**

22 Introduction to Law and Society (4). What constitutes a legal system? What does it mean for a society to have a system as a part of the social fabric. Examines the social status of law and its use as a tool for fashioning society. **(III)**

23 Introduction to Problems of Self and Mind (4). A study of basic problems in metaphysics, such as: What am I? A mind, a soul, a body? A social being? A bioorganism? Am I the same person today, yesterday, and tomorrow? Is there a story of my life that captures my essence? **(IV)**

29 Critical Reasoning (4). Introduction to analysis and reasoning. The concepts of argument, premise, and conclusion, validity and invalidity, consistency and inconsistency. Identifying and assessing premises and inferences. Deductive versus inductive reasoning, and introduction to the probability calculus. Evaluating definitions. Informal fallacies. Same as Logic and Philosophy of Science 29. **(V)**

30 Introduction to Symbolic Logic (4). An introduction to the symbolism and methods of the logic of statements, including evaluation of arguments by truth tables, the techniques of natural deduction and semantic tableaux. Same as Logic and Philosophy of Science 30. **(V)**

31 Introduction to Inductive Logic (4). Philosophical questions concerning the foundations of scientific inference, e.g., the traditional problem of induction, the Goodman paradox, the concept of cause, Mill's method of inductive reasoning, probability calculus, different interpretations of probability, and their interaction in inductive reasoning. Prerequisite: Philosophy 30 or 104. Same as Logic and Philosophy of Science 31. **(V)**

40 Special Topics in Philosophy (4). Lectures on selected topics at the lower-division level. May be repeated for credit as topics vary.

UPPER-DIVISION

100 Writing Philosophy (4). Discussion of those aspects of writing of special importance in philosophy, e.g., philosophical terminology, techniques for evaluating arguments, philosophical definitions and theories. At least 4,000 words of assigned composition based on philosophical readings. Prerequisites: satisfactory completion of the lower-division writing requirement; junior standing or consent of instructor. Same as Logic and Philosophy of Science 100.

101 Introduction to Metaphysics (4). A study of one or more of the problems of "first philosophy," e.g., substance, free will, causation, abstract entities, identity.

102 Introduction to the Theory of Knowledge (4). A study of one or more of the basic issues in epistemology, e.g., the role of perception in the acquisition of knowledge, the nature of evidence, the distinction between belief and knowledge, and the nature of truth and certainty. Same as Logic and Philosophy of Science 102.

103 Introduction to Moral Philosophy (4). A study of one or more of the problems of contemporary moral philosophy, e.g., the nature of justice, liberalism versus conservatism, happiness and its relation to virtue and right conduct, the objectivity of moral standards.

104 Introduction to Logic (4). Introduction to sentence logic, including truth tables and natural deduction; and to predicate logic, including semantics and natural deduction. Same as Logic and Philosophy of Science 104.

105A Elementary Set Theory (4). An introduction to the basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Prerequisite: Logic and Philosophy of Science 104 or Mathematics 6B or an upper-division course in Mathematics or consent of instructor. Philosophy 105A and Mathematics 151 may not both be taken for credit. Same as Logic and Philosophy of Science 105A.

105B Metalogic (4). Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Löewenheim-Skolem theorems. Prerequisites: Philosophy 105A or consent of instructor. Philosophy 105B and Mathematics 150 may not both be taken for credit. Same as Logic and Philosophy of Science 105B.

105C Undecidability and Incompleteness (4). Introduction to the formal theory of effective processes, including recursive functions, Turing machines, Church's thesis, and proofs of Göedel's incompleteness theorem for arithmetic, and Church's undecidability theorem for first-order logic. Prerequisite: Philosophy 105B or consent of instructor. Philosophy 105C and Mathematics 152 may not both be taken for credit. Same as Logic and Philosophy of Science 105C.

106 Topics in Logic (4). Selected topics in mathematical or philosophical logic. Prerequisite: Philosophy 105B or consent of instructor. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 106.

108 Topics in Induction, Probability, and Decision Theory (4). Selected topics in induction, probability, and decision theory. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 108.

110 Topics in Ancient Philosophy (4). Selected topics from the writings of Plato and Aristotle, e.g., Aristotle's criticisms of Plato's metaphysics, ethics, or politics. May be taken for credit twice as topics vary.

111 Topics in Medieval Philosophy (4). Studies of some of the major issues of concern to Medieval philosophers, e.g., universals, the nature and existence of God, faith, and reason. May be taken for credit twice as topics vary.

112 Topics in Renaissance Philosophy (4). Studies of such authors as Bruno and Montaigne. May be taken for credit twice as topics vary.

113 Topics in Modern Philosophy (4). Focuses on the works of one or more of the central philosophical figures of the modern period (e.g., Descartes, Leibniz, Hobbes, Locke, Hume, Kant) or on the treatment of one or more central philosophical problems by a number of these figures. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 113.

114 Topics in Nineteenth-Century Philosophy (4). Studies of some of the major figures after Kant (e.g., Hegel, Nietzsche, Marx, Kierkegaard), especially in German idealism and social thought. May be repeated for credit as topics vary.

115 Topics in History of Analytic Philosophy(4). Review of one or more central theories or figures in the history of analytic philosophy. Emphasis is on the study of original sources, especially writings of Frege, Russell, Schlick, Carnap, and Quine. Topics include the nature of meaning and truth, the synthetic/analytic distinction, and scientific knowledge. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 115.

116 Topics in Continental Philosophy. Studies of some of the major figures (e.g., Husserl), movements (e.g., phenomenology, existentialism) in early twentieth-century continental European thought. May be repeated for credit as topics vary.

117 Topics in East Asian Philosophy (4). Selected topics in the philosophies of East Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as East Asian Languages and Literatures 117. May be repeated for credit as topics vary. **(VIII)**

120 Topics in Metaphysics (4). Examines central philosophical questions concerning our own fundamental nature and that of the world around us (e.g., causation and necessity, determination, free will, personal identity, the mind-body problem). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 120.

121 Topics in the Theory of Knowledge (4). One or more topics in the theory of knowledge, e.g., the nature of rational justification, of perceptual knowledge, of *a priori* knowledge. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 121.

122 Topics in Philosophy of Mind (4). Selected topics involving the concept of mind, e.g., the relation between mind and body, the self, personal identity, consciousness, the unconscious. May be repeated for credit as topics vary.

123 Topics in Philosophy of Religion (4). Critical examination of concepts involved in the theological literature, e.g., the nature and existence of God, miracles, the problem of evil, divine command theories in ethics. May be repeated for credit as topics vary.

130 Topics in Moral Philosophy (4). Selected topics in ethics. May be repeated for credit as topics vary.

131 Applied Ethics. Application of moral theories and arguments to important problems facing contemporary society.

131A Applied Ethics (4). Topics may include capital punishment, world hunger, obligations to future generations, environmental ethics, animal rights, economic justice, sexual morality, affirmative action, racism and sexism, or legalization of drugs.

131C Medical Ethics (4). Analysis of moral issues concerning health care. Topics may include: just allocation of scarce medical resources, the doctor/patient relationship, genetic engineering, surrogate motherhood, abortion, euthanasia, or social policy concerning AIDS.

132 Topics in Political and Social Philosophy (4). Selected topics in social and political philosophy, e.g., the functions of government, the justification of political authority, the nature of democracy, the varieties of liberty, and social justice. Readings from classical and contemporary sources. May be repeated for credit as topics vary.

133 Topics in Philosophy of Law (4). Selected topics concerning legal systems and the concept of law, e.g., the nature and purpose of law, the nature of authority, the relationship between law and morality, law and political-economic systems. May be repeated for credit as topics vary.

140 Topics in Philosophy of Science (4). Selected topics in contemporary philosophy of science, e.g., the status of theoretical entities, the confirmation of theories, the nature of scientific explanation. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 140.

141A Topics in Philosophy of Physics (4). Selected topics in the philosophy of physics, e.g., the interpretation of quantum mechanics, the nature of spacetime, the problem of quantum field theories. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 141A.

141B Geometry and Spacetime (4). An examination of the foundations of the special theory of relativity, with emphasis on the geometry of Minkowski spacetime, and its relation to both Euclidean and non-Euclidean (hyperbolic) plane geometries. Prerequisites: multivariable calculus and linear algebra at the undergraduate level. Same as Logic and Philosophy of Science 141B.

141C Philosophy of Quantum Mechanics (4). An examination of the standard von Neumann-Dirac formulation of quantum mechanics. The quantum measurement problem is discussed along with several proposed solutions, including GRW, many-worlds, man-minds, and Bohm's theory. Same as Logic and Philosophy of Science 141C.

141D Probability and Determinism (4). An examination of a cluster of interrelated issues concerning probability, determinism, logic, and the foundations of quantum mechanics. Prerequisites: multivariable calculus and linear algebra at the undergraduate level. Same as Logic and Philosophy of Science 141D.

142 Writing/Philosophy of Biology (4). Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Course work includes one 4,000-word and four 1,000-word papers. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Biological Sciences E142 and Logic and Philosophy of Science 142.

143 Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 143 and Psychology 123P.

144 Topics in Philosophy of Social Science (4). Selected topics in the philosophy of the social sciences, e.g., is their goal to understand behavior or to predict and control it?; are they normative and the natural sciences not?; do they incorporate philosophical doctrines about language and mind? May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 144.

145 Topics in Philosophy of Language (4). Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts. May be repeated for credit as topics vary. Same as Linguistics 141 and Logic and Philosophy of Science 145. May be repeated for credit as topics vary.

146 Topics in Philosophy of Logic (4). Selected topics in the philosophy of logic, e.g., the nature of logical truth and our knowledge of it, the status of propositions, definite descriptions, and existential presuppositions. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 146.

147 Topics in Philosophy of Mathematics (4). Selected historical and contemporary topics in the philosophy of mathematics, e.g., mathematical truth and ontology, mathematical knowledge, the nature and role of proof, the workings of mathematics in application. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 147. Formerly Philosophy 147B.

150 Phenomenology (4). A study of the foundations of phenomenology in Husserl and its background in Bolzano, Frege, Brentano, Meinong, Kant, and Descartes. Topics include phenomenological method, theory of intentionality, meaning, perception, evidence, ego, other minds, intersubjectivity, and life-world. May be repeated for credit as topics vary.

151 Existentialism (4). A study of such central existentialist thinkers as Heidegger and Sartre. Philosophy 7 or 150 recommended as background.

152 Topics in Feminism (4). A study of selected topics in feminist theory and/or gender studies. May be repeated for credit as topics vary.

190 Special Topics in Philosophy (4). Lectures on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary.

199 Directed Special Studies (2 to 4). Independent study on a research topic supervised by a faculty member. May be repeated for credit as topics vary.

GRADUATE COURSES

200 Special Topics in Philosophy (4). Seminars on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary.

201 First-Year Seminar (4). Examination of some standard works in history of philosophy, value theory, metaphysics, or epistemology. Limited to and required of all first-year Philosophy graduate students in the School of Humanities.

205A Set Theory (4). The basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Same as Logic and Philosophy of Science 205A.

205B Metalogic (4). Formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Loewenheim-Skolem theorems. Prerequisite: Philosophy 205A. Same as Logic and Philosophy of Science 205B.

205C Undecidability and Incompleteness (4). Formal theory of effective processes, including recursive function, Turing machines, Church's thesis, and proofs of Goedel's incompleteness theorem for arithmetics, and Church's undecidability for first-order logic. Prerequisite: Philosophy 205B. Same as Logic and Philosophy of Science 205C.

206 Topics in Logic (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 206.

210 Topics in Ancient Philosophy (4). May be repeated for credit as topics vary.

211 Topics in Medieval Philosophy (4). May be repeated for credit as topics vary.

212 Topics in Renaissance Philosophy (4). May be repeated for credit as topics vary.

213 Topics in Modern Philosophy (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 213.

214 Topics in Nineteenth-Century Philosophy (4). May be repeated for credit as topics vary.

215 Topics in Analytic Philosophy (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 215.

216 Topics in Continental Philosophy (4). May be repeated for credit as topics vary.

218 Topics in Contemporary Philosophy (4). May be repeated for credit as topics vary.

220 Topics in Metaphysics (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 220.

221 Topics in Epistemology (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 221.

222 Topics in Mind and Action (4). May be repeated for credit as topics vary.

230 Topics in Ethics (4). May be repeated for credit as topics vary.

232 Topics in Political and Social Philosophy (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 232.

234 Topics in Aesthetics (4). May be repeated for credit as topics vary.

240 Topics in Philosophy of Science (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 240.

241 Topics in Philosophy of Physics (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 241.

242 Topics in Philosophy of Biology (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 242.

243 Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 243 and Psychology 231P.

244 Topics in Philosophy of Social Science (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 244.

245 Topics in Philosophy of Language (4). May be repeated for credit as topics vary. Same as Linguistics 241 and Logic and Science of Philosophy 245.

246 Topics in Philosophy of Logic (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 246.

247 Topics in Philosophy of Mathematics (4). May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 247.

248A-B-C Continental Philosophy Workshop (0-0-4). A three-quarter long workshop, conceived as a reading group and developed with the input of all participants, where significant texts are discussed and analyzed in class. 248A-B: In-progress grading. 248C: Satisfactory/Unsatisfactory only.

249 Logic and Philosophy of Science Workshop (1 to 4). A two- or three-quarter long workshop on selected topics in logic and philosophy of science. In-progress grading, Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 289.

250 Topics in Existentialism and Phenomenology (4). May be repeated for credit as topics vary.

298 Independent Study (4 to 12). May be repeated for credit.

299 Directed Research (4 to 12). May be repeated for credit.

399 University Teaching (4). Limited to Teaching Assistants. May be repeated for credit.

UNDERGRADUATE PROGRAM IN RELIGIOUS STUDIES

152 Humanities Instructional Building; (949) 824-9290
Carol Burke, **Director**

Core Faculty

Elizabeth Allen, *Department of English*
Marc Baer, *Department of History*
Carol Burke, *Department of English*
James Chiampi, *Department of French and Italian*
Susan Bibler Coutin, *Department of Criminology, Law and Society*
James B. Given, *Department of History*
Lamar M. Hill, *Department of History*
Bonnie Kent, *Department of Philosophy*
Susan B. Klein, *Department of East Asian Languages and Literatures*
Karen Leonard, *Department of Anthropology*
Mark A. LeVine, *Department of History*
Julia Reinhard Lupton, *Departments of English, Comparative Literature, and Education*
Steven Mailloux, *Department of English*
Jack Miles, *Department of English*
Keith L. Nelson, *Department of History*
Alka Patel, *Department of Art History*
Victoria Silver, *Department of English*

Affiliated Faculty

Linda Freeman Bauer, *Department of Art History*
Victoria Bernal, *Department of Anthropology*
Dickson D. Bruce, Jr., *Department of History*
Yong Chen, *Department of History*
Chungmoo Choi, *Department of East Asian Languages and Literatures*
Edward Fowler, *Department of East Asian Languages and Literatures*
Michael A. Fuller, *Department of East Asian Languages and Literatures*
Alexander Gelley, *Department of Comparative Literature*
Linda Georgianna, *Department of English*
Anna Gonosová, *Department of Art History*
Judy C. Ho, *Department of Art History*
S. Nicholas Jolley, *Department of Philosophy*
Cecelia Lynch, *Department of Political Science*
Sanjoy Mazumdar, *Department of Planning, Policy, and Design*
Michael T. McBride, *Department of Economics*
Margaret M. Miles, *Departments of Art History and Classics*
Maria C. Pantelia, *Department of Classics*
Kenneth L. Pomeranz, *Department of History*
Gary Richardson, *Department of Economics*
Michael Ryan, *Department of English*
Thomas P. Saine, *Department of German*
Martin Schwab, *Departments of Philosophy and Comparative Literature*
John H. Smith, *Departments of German and Comparative Literature*
Daniel Stokols, *Departments of Planning, Policy, and Design and of Psychology and Social Behavior*
Ulrike Strasser, *Department of History*
Timothy Tackett, *Department of History*
Roxanne Varzi, *Department of Anthropology*
Roger N. Walsh, *Department of Psychiatry and Human Behavior*

Undergraduate Program

Religious Studies includes an interdisciplinary major and minor that focus on the comparative understanding of the various ways different peoples, across space and through time, have developed their religious ideas, values, systems, beliefs, rituals, and traditions in response to fundamental questions of human existence. The curriculum seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society through study in the Schools of Humanities, Social Sciences, and Social Ecology, and the Claire Trevor School of the Arts. As an interdisciplinary academic discipline, the study of religion offers a rigorous, systematic, and dispassionate intellectual inquiry into various aspects of religious systems, their practitioners and outlooks, and their goals and expressions. It employs a wide variety of approaches and methods in order to understand the role of religion in both human experience and thought.

Students in the Religious Studies major complete an emphasis in either Judaism/Christianity/Islam or in World Religious Traditions.

CAREERS FOR THE RELIGIOUS STUDIES MAJOR

Majoring in Religious Studies is an excellent preparation for living in a multicultural society and for a variety of careers in counseling, teaching, commerce, writing, government, the arts, and professional religious leadership. The major's emphasis on broad understanding, critical thinking skills, and clear written expression provides an effective springboard for graduate study in the humanities and social science or professional schools in medicine, law, or business.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE B.A. DEGREE IN RELIGIOUS STUDIES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Requirements for the Major

A. Three core courses: Religious Studies 5A, 5B, 5C.

B. Religious Studies 110.

C. Six upper-division electives, two selected from each of the following three categories. One relevant lower-division course may be substituted for an upper-division course, with prior approval.

1. *Judaism/Christianity/Islam:* Religious Studies 130, 140, 141; Anthropology 125Z; Art History 112, 114, 118; English 102A*, 103*; History 110*, 130A, B, C, 131, 132; International Studies 179*; Philosophy 11, 111, 123; Spanish 116; Women's Studies 166A*.
2. *World Religious Traditions:* Religious Studies 91, 120; Anthropology 135I; Art History 152, 175; Asian American Studies 150*; Classics 45A, 151; East Asian Languages and Literatures 20, 116, 117; Philosophy 117; Sociology 136.
3. *Thematic Approaches to Religion:* Religious Studies 100, 103, 106, 170; Anthropology 134E, 135A; Comparative Literature 132*; English 106*; History 135B, 180*; Philosophy 21, 123; Political Science 149*; Social Science 170P; Sociology 56; Women's Studies 60C.

D. Completion of an emphasis in either Judaism/Christianity/Islam or in World Religious Traditions: select two additional upper-division courses from either category 1 or 2 above.

*with prior approval, when topic is appropriate

Other courses will be approved for each category on a quarterly basis; see http://www.humanities.uci.edu/religious_studies/.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI.

Requirements for the Minor

A. Religious Studies 5A, 5B, 5C.

B. Religious Studies 110.

C. Four upper-division electives selected from the three categories above, including at least one course from both categories 1 and 2. Two of the four courses must be outside of the student's

major. One relevant lower-division course may be substituted for an upper-division course, with prior approval.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Courses in Religious Studies

***(Schedule of Classes* designation: Rel Std)**

LOWER-DIVISION

5A World Religions I (4). An introduction to the history, doctrine, culture, and writing of the three "religions of Abraham": Judaism, Christianity, and Islam. **(IV, VIII)**

5B World Religions II (4). An introduction to various religious traditions in selected areas of the world—including India and South Asia, East Asia, Africa, and the Americas. **(IV, VIII)**

5C World Religions III (4). A thematic comparison of selected structures and activities that characterize religious traditions. Comparative features may include, for example, holy scriptures, symbolizations of the sacred, attitudes toward afterlife, collective religious behavior, and religious dissent. **(IV, VIII)**

17 An Economic Approach to Religion (4) Introduction to how basic economic concepts such as demand, supply, consumption, production, competition, free-riding, innovation, regulation, and rent-seeking can be applied to understand observed religious behavior. Same as Economics 17. **(III)**

21 Philosophy and Religion (4). Examines the intersection of religion and philosophy from a standpoint that does not presuppose previous academic study of either. Both Western and Eastern traditions and perspectives may be explored. May be taken for credit three times as topics vary.

56 Society and Religion (4). A critical and personal examination of the varieties of religious and spiritual experience human beings are undergoing in contemporary society. The role of conscious understanding and unconscious conditioning regarding religion and spirituality. May be taken for credit three times as topics vary.

60 Gender and Religion (4). Introduces the topic of religion in a feminist context by performing cross-cultural exploration of gender, authority, and faith in various traditions. Study includes (but is not limited to) writings of contemporary Jewish, Christian, and Muslim feminists. May be taken for credit three times as topics vary.

90 Aspects of Religion (4). A presentation of selected issues in the study of religion. May be taken for credit three times as topics vary.

91 Aspects of Asian Religions (4). A survey course of a specific Asian religious tradition such as Hinduism, Buddhism, Taoism, Confucianism, or Shinto in its manifestation in Asia or in its transmission to the Americas. May be taken for credit three times as topics vary.

UPPER-DIVISION

100 Topics in the Study of Religion (4). The intersection of religious belief and practices with selected subjects of continuing interest. May be taken for credit three times as topics vary.

103 Topics in the Philosophy of Religion (4). Critical examination of philosophical concepts in religious scripture and theology, e.g., the nature and existence of God, miracles, the problem of evil, divine command theories in ethics. May include both Eastern and Western religious traditions. May be take for credit three times as topics vary.

106 Topics in Gender and Religion (4). Critical examination of how religious beliefs and practices have shaped (and been shaped by) attitudes toward gender and sexuality in modern and/or premodern society. May be taken for credit three times as topics vary.

110 Theory and Methodologies in the Study of Religion (4). Introduction to major thinkers, theories, and methodologies in the study of religions. Includes paper on relevant Religious Studies topic; emphasis on developing the student's ability to analyze and articulate theoretical arguments. Prerequisite: Religious Studies major or consent of instructor. May be taken for credit three times as topics vary.

120 Asian Religious Traditions (4). Studies involving (but not limited to) Hinduism, Buddhism, Confucianism, Taoism, Shinto, and Shamanism, including both elite and doctrinal aspects and forms of more popular religiosity. May be taken for credit three times as topics vary.

130 Jewish, Islamic, and Middle Eastern Religious Traditions (4). Character and evolution of Egyptian, Jewish, Zoroastrian, Muslim, and other religious communities of the region from their formative periods to the present era. May be taken for credit three times as topics vary.

140 Early Western Religious Traditions (4). Religious perspectives of the Mediterranean and European regions from the earliest times to approximately 1500 C.E. May be taken for credit three times as topics vary.

141 Recent Western Religious Traditions (4). Studies related to Catholic, Protestant, and Orthodox Christianity as well as alternative belief systems in Europe of the early modern and modern eras. May be taken for credit three times as topics vary.

150 Religion in the Americas (4). Religious belief and social context in North and South America from the earliest human societies to the present. May be taken for credit three times as topics vary.

160 Diaspora Religions (4). Examination of what happens to belief and practice as religious communities are scattered geographically. May be taken for credit three times as topics vary.

170 Comparative Studies in Religion (4). Systematic comparisons of different religious and quasi-religious traditions, their beliefs, and practices. May be taken for credit three times as topics vary.

190 Senior Colloquium (4). Reading and group discussion of selected texts under the direction of an instructor. Paper required. Prerequisite: consent of instructor; a minimum of two students must enroll. May be taken for credit three times as topics vary.

199 Independent Study (1 to 4). Directed reading and research in consultation with a faculty advisor. Substantial written work required. Prerequisites: upper-division standing and consent of instructor. May be repeated for credit as topics vary.

PROGRAM IN RUSSIAN STUDIES

429 Murray Krieger Hall; (949) 824-3961
Lora Mjolsness, **Director**

Faculty

Michael A. Green, Ph.D. University of California, Los Angeles, *Professor Emeritus of Russian* (eighteenth-century Russian theatre and literary theory, Pushkin, Chekhov, Kuzmin, Russian Symbolist theater, cabaret theatre, Russian literature and theater of the 1920s)

Victorina Lefebvre, Ph.D. Lomonosov Moscow State University, *Lecturer in Russian* (methods of teaching, comparative study of Soviet and American culture, Russian language and literature)

Lynn Mally, Ph.D. University of California, Berkeley, *Professor of History* (modern Russian and Soviet history)

Lora Mjolsness, Ph.D. University of Southern California, *Director of the Program in Russian Studies and Lecturer in Russian* (nineteenth- and twentieth-century and contemporary children's literature; Soviet and Russian animation; Russian folklore)

Spanning both Europe and Asia, Russia is one of the world's dominant political entities. Its rich cultural traditions have enhanced world literature, theater, art, and dance. As the world's first socialist state, it became a major political rival of the United States after the Second World War. In the past decade, Russians have abandoned their socialist system and are now in the process of making a rocky transition to capitalism. Although Russia lost sizeable amounts of territory in this transition, the Russian language now serves as the *lingua franca* throughout many areas formerly controlled by the Soviet Union.

While the demand for specialists in various sectors of government has eased, relationships between our countries at other levels of society are growing more active and business opportunities are exciting and rewarding. Other areas in which the need for Russian language competence is evident right now include trade, environmental protection, social services, law, medicine, and technology.

All students in Russian language courses are encouraged to take part in the UC Education Abroad Program and spend a portion of their junior or senior year studying in Russia. Additional information is available in the Center for International Education section of this *Catalogue.*

The Russian Studies minor is a multidisciplinary curriculum combining the Humanities, Social Sciences, and Social Ecology. It is designed to introduce students to the rich history and culture of Russia and provide them with the intellectual and linguistic tools necessary for sustained engagement with this area of the world.

REQUIREMENTS FOR THE MINOR

Language Other Than English Placement and Progression: See page 253.

Russian 1A-B-C, 2A-B-C, 50 (three different topics); 16 units of upper-division courses selected from the following: Russian 140, 150, 190, 199, appropriate Comparative Literature courses, History 124A, 124B, 190 (when topics are related to Russia), Political Science 152D, 159 (when topics are related to Russia), Anthropology 136D, 164P (same as Political Science 154F). A maximum of four units may be chosen from the following courses devoted in part to Russian themes: History 114, 126A, 126B, 126C, 158A, Political Science 142D, 142F, 143E, and Environmental Analysis and Design E113 (same as International Studies 121).

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Courses in Russian

***(Schedule of Classes* designation: Russian)**

LOWER-DIVISION

1A-B-C Fundamentals of Russian (5-5-5) F, W, S. Focuses on reading, comprehension, basic composition, and conversation skills, and gives the student an initial exposure to the Russian cultural scene. Prerequisite for 1B: Russian 1A with a grade or C or better, or equivalent; for 1C: Russian 1B with a grade of C or better, or equivalent. (1C: **VI**)

2A-B-C Intermediate Russian (5-5-5) F, W, S. Students read simple passages from contemporary Russian literary texts and newspapers. Development of oral skills and exposure to Russian culture continue. Prerequisite for 2A: Russian 1C with a grade of C or better, or three years of high school Russian, or equivalent; for 2B: Russian 2A with a grade of C or better, or equivalent; for 2C: Russian 2B with a grade of C or better, or equivalent. (**VIII**)

50 Russian Culture (4) F, W, S. Study of varied topics in Russian culture, area studies, and society, both in the present and in historical perspective. Topics are not normally repeated for a two-year period. May be taken four times for credit as topics vary. (**IV, VIII**)

97 Fundamentals of Russian (with Emphasis on Reading) (4). Designed primarily for students interested in acquiring a solid reading knowledge of Russian, and to facilitate the understanding and translating of Russian texts dealing with a variety of disciplines. Not open to Russian Studies minors. Does not serve as prerequisite for any higher-level Russian courses or fulfill any undergraduate foreign language requirement.

99 Special Studies Russian (1 to 5). Prerequisite: consultation with instructor necessary prior to enrollment.

UPPER-DIVISION

140 Topics in Russian Literary Theory (4). Examines the work of individual theorists and schools of literary theory in the nineteenth and twentieth centuries. May be repeated for credit as topics vary. (**VIII**)

150 Topics in Russian Literature (4) F, W, S. Examines major themes in Russian literature, film, and other media from the eighteenth to twenty-first centuries. Taught in English. May be repeated for credit as topics vary. (**VIII**)

190 Russian Language Through Film (4). Uses Russian films of the late twentieth century to enhance students' language skills and deepen their cultural knowledge. Work involves intensive conversation, reading and listening comprehension, and the acquisition of written skills and grammatical accuracy. Conducted primarily in Russian. Prerequisite: Russian 2C or consent of instructor. (**VIII**)

198 Directed Group Study (4) F, W, S. Group independent study under direct faculty supervision. Prerequisite: consent of instructor. May be taken two times for credit.

199 Independent Study (1 to 4) F, W, S. Independent study under direct faculty supervision. Prerequisite: consent of instructor. May be taken two times for credit.

DEPARTMENT OF SPANISH AND PORTUGUESE

322 Humanities Hall; (949) 824-6901
Horacio Legrás, **Department Chair**

Faculty

Ana María Amar Sánchez, Ph.D. Universidad de Buenos Aires, *Associate Professor of Spanish* (Latin American literature, mass culture studies and critical theory)

Luis F. Avilés, Ph.D. Brown University, *Associate Professor of Spanish* (Golden Age literature and critical theory)

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish* (Latin American and Chicano literatures)

Anne J. Cruz, Ph.D. Stanford University, *Professor Emerita of Spanish* (Golden Age Spanish and comparative literature)

Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor Emerita of Spanish* (Latin American literature, literary theory, and women's studies)

Michelle M. Hamilton, Ph.D. University of California, Berkeley, *Associate Professor of Spanish* (medieval Spain, including Hebrew and Arabic literature of al-Andalus)

Ivette N. Hernández-Torres, Ph.D. Brown University, *Associate Professor of Spanish* (colonial literature and Caribbean literature)

Horacio Legrás, Ph.D. Duke University, *Department Chair and Associate Professor of Spanish* (Latin American literature and culture)

Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese* (Latin American novel and short story)

Santiago Morales-Rivera, Ph.D. Harvard University, *Assistant Professor of Spanish* (contemporary Spanish intellectual history, literature and culture)

Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (eighteenth- through twentieth-century Spanish literature; film and visual arts; aesthetics and contemporary cultures)

Héctor Orjuela, Ph.D. University of Kansas, *Professor Emeritus of Spanish* (Latin American literature, poetry and essay)

Julian Palley, Ph.D. University of New Mexico, *Professor Emeritus of Spanish* (modern Spanish literature)

Armin Schwegler, Ph.D. University of California, Berkeley, *Director of Global Cultures and Professor of Spanish* (history of Spanish, dialectology, historical linguistics, typology, Creoles)

Jacobo Sefamí, Ph.D. University of Texas at Austin, *Director of the Jewish Studies Minor and Professor of Spanish* (Latin American literature, contemporary poetry)

Dayle Seidenspinner-Núñez, Ph.D. Stanford University, *Professor Emerita of Spanish* (medieval Spanish and comparative literature)

Juan Villegas, Ph.D. Universidad de Chile, *Research Professor of Spanish* (literary theory, modern Spanish literature, Latin American theatre and poetry)

Zidia Webb, M.A. Michigan State University, *Lecturer with Security of Employment Emerita, Spanish and Portuguese*

Affiliated Faculty

Alejandro Morales, Ph.D. Rutgers University, *Professor of Chicano/Latino Studies and Spanish* (Latin American and Chicano literature, film studies, creative writing)

Undergraduate Program

BEGINNING SPANISH LANGUAGE COURSES

The beginning and intermediate Spanish language curriculum consists of six courses: Spanish 1A-B-C and 2A-B-C. This series is designed to teach students the four fundamental linguistic skills: speaking, understanding, reading, and writing Spanish. Using the Communicative Approach, these foundation courses have the objective to provide foreign language skills that facilitate successful transitioning into more advanced Spanish. At the same time, these beginning Spanish classes are an excellent portal for study abroad, be that in Spain or in Latin America. For an overview of relevant Education Abroad study sites, visit http://www.cie.uci.edu/academics/spanish.html.

All students must adhere to the placement policies listed hereafter. Students with prior knowledge of Spanish may need to take the Spanish placement test.

Spanish Placement

To enroll in Spanish 1A or any Spanish course through the 3A/3B level:

Heritage speakers: Native or near-native speakers who place into Spanish 2C and whose home language is Spanish are encouraged to enroll in Spanish 2NS, Spanish for Native Speakers.

Students *without* previous background in Spanish must take a copy of their high school transcript to the Humanities Undergraduate Counseling Office in 143 Humanities Instructional Building (HIB) to activate their eligibility to enroll in Spanish 1A or 1AB.

Students *with* previous high school background in Spanish wanting to enroll in any Spanish 1A through Spanish 3A/3B course at UCI for the first time must take the placement test. Eligibility to enroll in any Spanish 1A through Spanish 3A/3B course at UCI will be based on the result of that placement test.

Students *with* a previous course (or courses) in Spanish from another college or university who want to enroll in any Spanish 1A through Spanish 3A/3B course at UCI must take a copy of their college transcripts to the Humanities Undergraduate Counseling Office in order to receive authorization to enroll in the next course.

Students who graduated from a high school in a Spanish-speaking country, or who graduated from a Spanish Academy, must take a copy of their transcripts to Amina Yassine (ayassine@uci.edu), Interim Language Curriculum Director, Humanities Hall 322, to determine where they should be placed.

Students who have already met the UCI language other than English general education or breadth requirement with SAT Subject Test scores, International Baccalaureate (IB) scores, or Advanced Placement (AP) examination and plan to enroll in a Spanish course at UCI are still required to take the Spanish placement test. Students cannot earn units or grade points at UCI in courses from which they have been exempted on the basis of IB or AP credit, even if the placement test result recommends enrollment in such a level.

Students currently enrolled in any Spanish 1A through Spanish 2B course at UCI will be eligible to enroll for the next course within the series without having to take the placement test, provided they receive a C or better.

To enroll in Spanish 3A, 3B, or beyond: An active prerequisite check system is in place for Spanish 3A and 3B. In order to enroll in Spanish 3A or 3B a student must have passed Spanish 2C or 2NS or received a score in the range of 91–99 on the Spanish placement test. Students who score 100 or above on the Spanish placement test may proceed to upper-division Spanish courses upon the recommendation of the Interim Language Curriculum Director, Amina Yassine (ayassine@uci.edu), Humanities Hall 322.

Placement testing is offered throughout the academic year (summer included). For details about registering for a placement test, contact the Academic Testing Center, 3040 Anteater Instruction and Research Building; (949) 824-6207; e-mail: testoff@uci.edu; http://www.testingcenter.uci.edu. Placement test results are valid for one calendar year.

BACHELOR'S DEGREE IN SPANISH

The B.A. program in Spanish is devoted to the study of the languages and cultures of Spanish-speaking countries.

Students select one of three emphases: (1) Literature and Culture; (2) Spanish for Future Teachers; or (3) Cinema: Spain, Latin America, and U.S. Latino. Each of these emphases strives to teach students to speak Spanish with fluency, and to carry out academic work in this language. The major, however, goes far beyond mere language learning, as it is designed to offer a broad humanistic education. The courses explore the literatures and cultures of Spain and Latin America from their first manifestations to the present. The faculty approach this rich cultural legacy from an interdisciplinary perspective that puts Latin American and Spanish texts in dialogue with other fields of knowledge such as anthropology, linguistics, history, women's studies, and studies on globalization, among others. The program also offers courses in Spanish and Latin American film, as well as in visual culture. Unless stated otherwise, courses in the three emphases are taught in Spanish.

By the end of the first year, students attain mastery of the basic structure of the language and ability to converse on everyday topics, as well as to read and write at an elementary level. In the second year, emphasis is put on gradually raising the level of the student's ability to read and write. Two third-year courses (Spanish 3A and 3B) stress composition and grammar. Furthermore, a course in phonetics (Spanish 113A) aims to perfect pronunciation and presents historical and dialect variants of Spanish. Spanish 107 (Advanced Spanish Grammar) helps students solidify fine points of grammar. In addition to giving students a sense of literary history, the introductory courses in literature (Spanish 101A, 101B), also to be taken in the third year, introduce students to elements of literary research and writing. The courses in Hispanic culture (Spanish 110A, 110B, 110C) combine a panoramic overview with a close look at a specific country or topic, and require a final research project. Upper-division literature and film courses offer a more detailed analysis of specific texts and require a final research paper.

The faculty encourages students who are serious about improving their Spanish language ability in reading, writing, and speaking to take advantage of opportunities to immerse themselves in the Spanish language by studying in Argentina, Chile, Costa Rica, Mexico, Spain, or other Spanish-speaking countries through various study abroad programs administered through UCI's Center for International Education. Programs are available for the summer, one quarter, one semester, or one year. This allows students to complete a significant portion of their bachelor's degree requirements in Spain or Latin America (for details, see Residence Requirements below). While abroad, students are given the opportunity to improve their Spanish in a natural context, and to enjoy exposure to other cultures. Once back at UCI, students who have studied abroad typically use this newly gained knowledge to excel

in advanced upper-division courses, and to successfully enter graduate school programs or the career path of their choice. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

Double Major: Students in the B.A. program often double major. Double majoring in Spanish and a second department provides the best of both worlds: the requirements for the Spanish major give students the linguistic and humanistic skills that will qualify them for diverse career paths, while the second degree provides students with the additional expertise they are seeking. Together, these bachelor's degrees will reward students with a distinctively competitive edge. A double major is especially useful for pre-med, pre-law, and other students (future teachers included) who want an extensive education in the natural or social sciences and a strong liberal arts program as well.

REQUIREMENTS FOR THE B.A. DEGREE IN SPANISH

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Language Other Than English Placement and Progression: See page 253.

Departmental Requirements for the Major

Spanish 2C (or Spanish 2NS, for native speakers) or the equivalent is a prerequisite to Spanish 3A or 3B. Spanish 3A and 3B are the prerequisites for all upper-division courses. Spanish 3A can be taken concurrently with 3B, though it is recommended that students take these two courses in sequence.

Students must choose one of the following emphases:

1. Emphasis in Literature and Culture

A. Spanish 3A, 3B, 101A, 101B, 107 or 113A, 119, 190.

B. Eight upper-division Spanish courses in literature, two of which may be substituted by culture, film, and/or creative writing courses offered by the Department of Spanish and Portuguese.

2. Emphasis in Spanish for Future Teachers

A. Spanish 3A, 3B, 15, 101A, 101B, 107, 113A, 113B, 119.

B. Three upper-division Spanish courses; one must be a Chicano/U.S. Latino course selected from Spanish 100E, 110C, 140A, 140B, or 142.

NOTE: Students who wish to pursue a career in teaching are encouraged to complete the minor in Educational Studies in tandem with the emphasis. The following courses are recommended in fulfillment of the minor in Educational Studies: Education 108, 124, 128, 131, 173, 349; Education 160 and 160L, or two quarters of Humanities 195.

3. Emphasis in Cinema: Spain, Latin America, and U.S. Latino

A. Spanish 3A, 3B, 101A, 101B, 107 or 113A, 119, 190.

B. Film and Media Studies 85A.

C. Seven upper-division electives:

1. Four must be in film:
   (a) One film course must be taken in the Department of Film and Media Studies;
   (b) One film course can come from any department (including the Department of Spanish and Portuguese);
   (c) Two film courses must be taken in the Department of Spanish and Portuguese.
2. Any three courses from the Department of Spanish and Portuguese.

Residence Requirement for the Major (all emphases): At least five upper-division courses required for the major must be completed successfully at UCI. By petition, two of the five may be taken through the UC Education Abroad Program, providing course content is approved by the Humanities Office of Undergraduate Study and the Undergraduate Director of the Department of Spanish and Portuguese. See also the Study Abroad Option below.

Departmental Requirements for the Spanish Minor

Language Other Than English Placement and Progression: See page 253.

Seven courses taught in Spanish: Spanish 3A and 3B plus any five Spanish courses beyond 3A and 3B. Four of those five courses must be upper-division.

NOTE: Spanish 2C or 2NS (or equivalent) is a prerequisite to Spanish minor requirements.

Residence Requirement for the Spanish Minor: At least four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department or committee chair.

Departmental Requirements for the Portuguese Minor

Language Other Than English Placement and Progression: See page 253.

Portuguese 120A, B, C and four courses from Portuguese 121 with different topics.

NOTE: Portuguese 2C (or equivalent) is a prerequisite for Portuguese 120A, B, C.

Residence Requirement for the Portuguese Minor: At least four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, providing course content is approved in advance by the appropriate department chair.

STUDY ABROAD OPTION

Students are encouraged to study abroad, possibly satisfying a significant portion of their major requirements abroad. For the maximum number of courses allowed and other pertinent details, see the Spanish Undergraduate Web site at http://www.humanities.uci.edu/spanishandportuguese/program/undergrad.php.

All courses taken abroad must be approved. Approval typically involves the following: (1) presentation of syllabi and other pertinent course materials (term papers, exams, etc.) from the host university, and (2) submission of a UCI Humanities Petition form (available online, and to be completed after the student's return to UCI) to the Undergraduate Director of the Department of Spanish and Portuguese, and to the Humanities Office of Undergraduate Study (HIB 143). Students are advised to consult with the Undergraduate Director and the Humanities Office of Undergraduate Study, both before and after their stay abroad. See also the Residence Requirement above.

CAREER OPPORTUNITIES

With over 400 million speakers, Spanish is the third most widely spoken language in the world, which explains in part why Spanish has such a growing global reach and rapidly increasing national and international appeal—in business, education, the media, sports, as well as elsewhere. Knowledge of the Spanish language and cultures has thus become highly marketable in many professions (nursing, the entertainment and/or travel industry, tourism, among others).

The Spanish B.A. degree prepares students to have ready access to careers that require advanced knowledge of the Spanish language and the multiple cultures associated with it. At the same time, competitive students in the program obtain a solid preparation for graduate school. The students' graduate career paths vary widely and include literary and/or cultural studies, teaching, nursing, law/business, nonprofit organizations, medicine, sociology, and other specialties.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. For additional information, visit these two sites: http://www.career.uci.edu, and http://www.humanities.uci.edu/spanish/career.htm.

Graduate Program

All graduate courses in the Department are taught in either Spanish or Portuguese, unless otherwise indicated in the course description.

MASTER OF ARTS IN SPANISH

The Master of Arts degree in Spanish is a two-year program of study designed to expose the beginning graduate student to all periods of peninsular, Latin American, and Chicano/Latino literature and culture. The degree is awarded upon the successful completion of course work and written and oral comprehensive examinations. A minimum of 10 courses must be completed with a letter grade; at least eight of these must be graduate seminars. Required course work includes one course in Theory (239A or B), and one course in Chicano/Latino literatures. Proficiency (defined as the equivalent of completing 2C) in a foreign language other than Spanish is required; it is recommended that master's students take Portuguese as their foreign language, although other languages are accepted. Master's candidates must complete a minimum of three quarters of course work in the Department; the maximum time to complete the master's program is two years. Students entering with a bachelor's degree must satisfy the requirements for a master's degree before they proceed toward a Ph.D. This includes the master's level examinations and course work. Normally only students intending to work toward the Ph.D. are admitted to the graduate program.

DOCTOR OF PHILOSOPHY IN SPANISH

The Department of Spanish and Portuguese offers a Ph.D. degree in Spanish with a specialization in Spanish, Spanish-American, or Chicano/Latino literatures and cultures. The program integrates period and genre studies with work in literary and critical theory, linguistics, sociohistorical studies, and cultural studies. The Department seeks to professionalize its Ph.D. candidates not as narrow specialists but rather as scholars and critics acquainted with a range of fields that relate to and enhance their discipline. Graduate emphases in Comparative Literature, Critical Theory, and Feminist Studies are available; other areas of study (for example, film, history) may be designed with approval from the student's Ph.D. guidance committee. The Department has been traditionally committed to excellence in teaching, both in its own practice and in the formation of its graduates.

Language Requirements

In addition to Spanish and English, all doctoral candidates should have the necessary command of Portuguese to successfully complete a graduate course in Portuguese. An additional foreign language (with proficiency equivalent to the 2C level) is also required; this requirement may be satisfied by examination or course work. The selection of a second foreign language must be approved by the student's guidance committee and is based on the specific research interests and field of study of the candidate.

Course Requirements

A minimum of 20 courses beyond the B.A. or 10 beyond the M.A. are required. One course in linguistics (diachronic or synchronic), and one graduate course in Luso-Brazilian literature are required at the Ph.D. level. Note that these requirements may include course work completed in the master's program; the remaining elective courses are selected with the approval of the student's guidance committee to prepare for the doctoral examination and the dissertation. Students are encouraged to take more than the minimum number of required courses.

A student who transfers into the doctoral program from elsewhere must take a minimum of 10 graduate courses at UCI, of which seven must be in the Department of Spanish and Portuguese. With regard to students who enter the Ph.D. program with their master's degree from another institution, the Ph.D. guidance committee will determine the number of courses that will be accepted.

A student may pursue the Ph.D. with an emphasis in Comparative Literature by taking a minimum of five courses in the Comparative Literature program.

Time to Degree

The normative time for completion of the Ph.D. is seven years; four years to candidacy, three years in candidacy. The maximum time permitted is eight years.

Teaching

The Department recognizes its responsibility to train all Ph.D. candidates as teachers and requires that all doctoral students with no prior teaching experience complete a minimum of three quarters of language teaching (Spanish 399). Moreover, all doctoral students are encouraged to complete a teaching practicum by co-teaching an upper-division course with a professor and enrolling in Spanish 292, which is graded Satisfactory/Unsatisfactory only.

Qualifying Examination

Upon completion of course work, the Ph.D. student advances to candidacy by passing the written and oral qualifying examinations by unanimous decision. The qualifying examination requires the student to develop two topics in close consultation with the examination committee. One topic must present a critical problem from a historical perspective, while the other may focus on a more specific area within the student's major field of interest. Students are encouraged to incorporate theoretical and interdisciplinary components into the formulation of their topics. A two-hour oral examination that includes discussion of the written examinations is also required. The normative time for advancement to candidacy is four years.

Dissertation

A dissertation topic is chosen by the candidate in consultation with the dissertation director and committee, and normally falls within the major field covered by the qualifying examinations. The candidate presents a study plan to the dissertation committee, which approves the proposal and a preliminary research outline. The student submits drafts of chapters to the dissertation director who corrects and approves the drafts and circulates them to other committee members for commentary.

DISTINGUISHED VISITING PROFESSORS

The Department's Distinguished Visiting Professors program brings students in direct contact with some of the outstanding intellectuals in the field of Spanish, Latin American, and Chicano/United States Latino literatures and cultures. Distinguished visiting professors teach both graduate and undergraduate courses

during one or two quarters and give one public lecture. Past program participants have included Alan Deyermond, Paul Julian Smith, Homero Aridjis, Roberta Johnson, and Jorge Schwartz, among others.

Courses in Spanish

***(Schedule of Classes* designation: Spanish)**

Enrollment Authorization: See page 253 for Language Other Than English Placement information and page 327 for specific Spanish placement. Students with prior college courses(s) must take a copy of their college transcripts to the Humanities Undergraduate Counseling Office for enrollment authorization.

NOTE: Spanish 1A, S1AB, and 1AB are open only to students who have no prior knowledge of Spanish. Students must take a copy of their high school transcript to the Humanities Undergraduate Counseling Office, 143 Humanities Instructional Building, to activate their eligibility to enroll in Spanish 1A, S1AB, or 1AB. Equivalent sequences/courses may not be repeated for credit.

Lower-Division Course Equivalencies

Spanish 1 Series

1A	1B	1C
1AB		
S1AB	S1BC	

Sample Scenarios

Have taken:	May enroll in:	May *not* enroll in:
S1AB	S1BC; or 1B (for 2.5 units); or 1C (if grade of B or better earned in S1AB)	1A
1A	S1AB (for 2.5 units); or 1B; or S1BC (if grade of B or better earned in 1A)	
1B	1C; or S1BC (for 5 units)	S1AB
1AB	1C; or S1BC (for 5 units)	1A, 1B, or S1AB

Spanish 2 Series

2A	2B	2C or 2NS
2AB		
S2AB	S2BC	

Sample Scenarios

Have taken:	May enroll in:	May *not* enroll in:
S2AB	S2BC; or 2B (for 2 units); or 2C (if grade of B or better earned in S2AB)	2A
2A	S2AB (for 2 units); or 2B; or S2BC (if grade of B or better earned in 2A)	
2B	2C; 2NS; or S2BC (for 4 units)	S2AB
2AB	2C; 2NS; or S2BC (for 4 units)	2A, 2B, or S2AB

NOTE 1: 2C and 2NS are level-equivalent.
NOTE 2: 2BZ and 2MD are independent, intermediate-level courses; prerequisite: 1C or placement into 2A.

LOWER-DIVISION

1A-B-C Fundamentals of Spanish (5-5-5) F, W, S. Communicative approach with emphasis on conversational skills: the students and their environment, their experiences, and their opinions about issues. Reading and writing skills also introduced. Prerequisite for Spanish 1A: authorization or placement into 1A; for 1B: 1A or placement into 1B; for 1C: 1AB, 1B, or S1AB with a grade of B or better or placement into 1C. (1C: **VI**)

1AB Intensive Spanish Fundamentals (10) F, W, S. An intensive, proficiency-oriented, and task-based approach, designed to develop basic oral communicative abilities in Spanish. Reading and writing skills, along with an introduction to Hispanic cultures. Prerequisite: placement into Spanish 1A.

S1AB-BC Fundamentals of Spanish (7.5-7.5) Summer. First-year Spanish in an intensified form. Same as Spanish 1A-B-C during academic year. Prerequisite for Spanish S1AB: placement into 1A; for S1BC: S1AB or 1B, or placement into 1B or 1C. *If a student already received credit for 1B or 1AB only 5 units will be awarded for S1BC.* (S1BC: **VI**)

2A-B-C Intermediate Spanish (4-4-4) F, W, S. Conversation, reading, and composition skills are developed using texts of literary and social interest. Emphasis on grammar review. Prerequisite for 2A: Spanish 1C or S1BC or placement into 2A; for 2B: Spanish 2A, 2BZ, or 2MD, or placement into 2B; for 2C: Spanish 2B, 2AB, or S2AB with a grade of B or better, or placement into 2C. **(VIII)**

2AB Intermediate Intensive Spanish (8) F, W, S. Intensive intermediate course designed to improve student's abilities in reading, writing, speaking and comprehension, including a thorough introduction to Hispanic cultures. Throughout the course the grammatical component of the language is gradually reviewed and tested. Prerequisite: 1C, S1BC, or placement into Spanish 2A. **(VIII)**

S2AB-BC Intermediate Spanish (6-6) Summer. Second-year Spanish in a time-intensive form. Equivalent to Spanish 2A-B-C during academic year. For description, see Spanish 2A-B-C. Prerequisite for S2AB: Spanish 1C or S1BC or placement into 2A; for S2BC: Spanish 2B or S2AB. *If a student already received credit for 2B or 2AB only 4 units will be awarded for S2BC.* **(VIII)**

2BZ Spanish for Business Professionals (4) F, W, S. Primarily designed for those who need to understand Spanish correspondence and business functions. Helps to improve communication skills essential for interacting with Spanish-speaking clients. Spanish 2BZ is a stand-alone course, independent of the 2A-B-C series. Prerequisite: Spanish 1C or placement into 2A. **(VIII)**

2MD Spanish for Medical Professionals (4). F, W, S. Emphasis on medical terminology. Grammatical structures and vocabulary needed to interview and converse with Spanish-speaking patients. Spanish 2MD is a stand-alone course, independent of the 2A-B-C series. Prerequisite: Spanish 1C or placement into 2A. **(VIII)**

2NS Spanish for Native Speakers (4) F, W, S. Course for writing concise compositions in Spanish with emphasis on contrastive features and interferences from English. Learning-by-doing approach to teaching of Spanish grammar, vocabulary, and orthography. Prerequisite: Spanish 2B, 2AB, or S2AB with a grade of B or better, or placement into 2C and advanced (native-like) oral proficiency in Spanish. Spanish 2NS and 2C may not both be taken for credit. Formerly Spanish 5. **(VIII)**

NOTE: In order to enroll in Spanish 3A or 3B a student must have passed Spanish 2C or 2NS or received a score of 91 or above on the Spanish placement test.

3A Grammar and Composition (4) F, W, S. Focuses on intermediate to advanced grammar and composition in an orderly fashion. Emphasis is placed on key elements of grammar, to constitute about 70 percent of the course, and composition writing, to constitute about 30 percent of the workload. May be taken concurrently with Spanish 3B. Prerequisite: Spanish 2C, S2BC, or 2NS. **(VIII)**

3B Composition and Grammar (4) F, W, S. Focuses on intermediate to advanced grammar and composition in an orderly fashion. Emphasis is placed on key elements of grammar, to constitute about 30 percent of the course, and composition writing, to constitute about 70 percent of the workload. May be taken concurrently with Spanish 3A. Prerequisite: Spanish 2C, S2BC, or 2NS. **(VIII)**

15 Advanced Spanish Conversation (4) F, W, S. Designed to improve the fluency of non-native speakers of Spanish. Concentrates on the expansion of vocabulary, as well as listening and speaking skills. Not open to native or semi-native speakers of Spanish. Prerequisite: Spanish 2C with a grade of C or better or the equivalent.

44 Hispanic Literatures for Nonmajors (4) F, W, S, Summer. Focuses on major Spanish and Latin American literary texts within a historical and theoretical perspective. Taught in English with literary texts read in the original language. Prerequisites: Spanish 2C or 2NS (formerly Spanish 5) or equivalent; English majors only. **(VIII)**

50 Latin America, U.S. Latino, and Iberian Cultures (4) F, W, S, Summer. Introduction (for non-majors) to the culture of the Spanish- and Portuguese-speaking worlds (Europe, Latin America, U.S., Africa). May focus on any time period. Taught in English. May be taken for credit three times as topics vary. **(IV, VIII)**

97 Fundamentals of Spanish (with Emphasis on Reading) (4). Designed primarily for students interested in acquiring a solid reading knowledge of Spanish, and to facilitate the understanding and translating of Spanish texts dealing with a variety of disciplines. Not open to Spanish majors or minors. Does not serve as prerequisite for any higher-level Spanish courses or fulfill any undergraduate foreign language requirement. Taught in English. Prerequisite: consent of instructor.

UPPER-DIVISION

101A Introduction to Iberian Literature and Culture (4). Introduction to the major authors and movements of Iberian literature and culture from the Middle Ages to the present. Prerequisites: Spanish 3A and 3B. **(VIII)**

101B Introductory Studies in Latin American Literature and Culture (4). A historical overview of Latin American literature and culture mainly focused on canonical texts. Among topics: colonialism and postcolonialism, the nation, *indigenismo,* gender, literary movements. Also introduces literary analysis, research methods, and cultural critique. Prerequisites: Spanish 3A and 3B. **(VIII)**

104 Writing in Spanish (1). Designed to improve writing skills in Spanish. Materials and writing strategies in the workshop are directly tied to the materials covered in the 100-level course(s) in which the student is enrolled. Corequisite: concurrent enrollment in an upper-division course taught in Spanish and consent of instructor. May be taken for credit four times.

107 Advanced Spanish Grammar (4). Designed primarily for students who have demonstrated a substantial level of proficiency in their studies of the Spanish language. Takes a thorough approach to advanced grammatical problems, in order to assist students in their mastery of the elements of the Spanish language. Prerequisites: Spanish 3A and 3B.

110A Peninsular Literature and Cultures (4). Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary. **(VIII)**

110B Latin American Literature and Cultures (4). Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary. **(VIII)**

110C U.S. Latino Literature and Cultures (4). Focuses on some aspect—literature, art, cultural production, history—of the multifaceted Latino cultures that have developed within the United States. Can focus on one group, such as Caribbean Americans, Chicanos, Central Americans, or take a comparative perspective of several groups. Prerequisites: Spanish 3A and 3B, or consent of instructor. Same as Chicano/Latino Studies 134. **(VII)**

113A Spanish Phonetics (4). Introduction to basic notions of Spanish phonetics. Particular attention is paid to problems of pronunciation that arise in native and non-native speakers of Spanish due to interference between Spanish and English. Phonology (the system that underlies phonetics) and Spanish dialectology also included. Prerequisites: Spanish 3A and 3B.

113B Introduction to Spanish Linguistics (4). Application of basic notions of linguistics to Spanish, Spanish phonology, morphology, syntax, and semantics. Special attention to the application of linguistics to the teaching of Spanish. Prerequisites: Spanish 3A and 3B.

116 Medieval Spanish Literature and Culture (4). Medieval literature in Spain from ninth century to 1500. Works of lyric and epic poetry, prose fiction, and nonfiction. Substantial historical and cultural background explored. Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary. **(VIII)**

119 Textual Analysis and Interpretation (4). Focus on analysis and interpretation of literary texts, with emphasis on narrative, poetry, theater/performance, and visual media. Also introduces students to the major currents in theoretical thought, such as cultural studies, postmodernism, and others. Oral presentations and short essays are required. Taught in Spanish. Prerequisites: Spanish 3A and 3B. **(VIII)**

121 Golden Age Literature and Culture (4). Golden Age literature in Spain including the Renaissance and Baroque periods. Works of poetry, narrative, and theater. Historical and cultural background. Prerequisites: Spanish 3A and 3B. May be taken for credit three times as topics vary. **(VIII)**

122 Eighteenth- and Nineteenth-Century Spanish Literature and Culture (4). The main literary and ideological trends in eighteenth- and nineteenth-century Spain, including the enlightenment, romanticism, realism, and naturalism. Prerequisites: Spanish 3A and 3B. May be taken for credit three times as topics vary.

123 Twentieth- and Twenty-First-Century Spanish Literature and Culture (4). Twentieth- and twenty-first-century Spanish authors. Works of poetry, narrative, or theater. Historical context of the period and principles of literary theory. Prerequisites: Spanish 3A and 3B. May be taken for credit three times as topics vary.

130A Latin American Colonial Literature and Culture (4). Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary. **(VIII)**

130B Latin American Literature and Culture of the Nineteenth Century (4). Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary. **(VIII)**

130C Latin American Literature and Culture of the Twentieth Century (4). Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary. **(VIII)**

140A, B Chicano Literature (4, 4). Focus on contemporary Chicano literature, in relation to Chicana literature, women's literature, American literature, and Latino literature. Prerequisites: Spanish 3A and 3B, or consent of instructor. Same as Chicano/Latino Studies 110A, B. **(VII)**

142 Chicano Culture (4). Current research and perspectives on different aspects of Chicano culture: political, economic, sociological, artistic, and folkloric. Prerequisites: Spanish 3A and 3B, or consent of instructor. May be taken twice for credit as topics vary. Same as Chicano/Latino Studies 111B. **(VII)**

150 Literature in Translation (4). Study of texts by modern and contemporary Peninsular, Latin American, and/or U.S. Latino writers in translation. Taught in English. Not applicable toward Spanish major or minor requirements. May be repeated for credit as topics vary. **(VIII)**

151 Introduction to Translation (4). Introduction to basic techniques of Spanish-English written translation. The skills needed for translation are developed through the analysis of pertinent aspects of language structure, such as syntax, vocabulary, and style. Prerequisites: Spanish 3A and 3B. **(VIII)**

160 Topics in Luso-Hispanic Film Studies (4). Study of Peninsular, Latin-American, and/or U.S. Latino film. Taught in English or Spanish. Prerequisite: Spanish 3A and 3B when course is taught in Spanish. May be taken for credit three times as topics vary. Same as Film and Media Studies 160. **(VIII)**

185 Selected Topics in Peninsular Literature and Culture (4). Selection of representative topics in Spanish and/or Portuguese literature and culture. Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary. **(VIII)**

186 Selected Topics in Latin American Literature and Culture (4). Selection of representative topics in the history of Latin American literature and culture. Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary.

187 Selected Topics in Spanish Linguistics (4). Major topics in Spanish linguistics. Prerequisites: Spanish 3A and 3B. May be repeated for credit as topics vary.

190 Colloquium (4). Specialized, discussion-based course dealing primarily with a research topic that reflects the instructor's current intellectual interests. Required oral presentation(s) and final research paper. Limited to 15 students. Prerequisites: Spanish 107 or 113A and junior or senior Spanish major or consent of instructor.

199 Independent Study (1 to 4) F, W, S. Research paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE

The content of most courses changes every year. In addition to the following courses, graduate students might find Humanities 200A, B, C (History and Theory) and Humanities 220A, B, C (Studies in Literary Theory and Its History) of special interest.

201 History of the Spanish Language (4) W. Diachronic survey of phonological changes from Latin to Old Spanish to Modern Spanish. Focuses on Castilian including Romance languages and other peninsular dialects for comparative purposes. Morphological changes.

204 Spanish in Contact (4). Sociohistorical and linguistic overview of Spanish in contact with Basque, Catalan, English, German, American Indian, and African languages in Spain, Latin America, and the United States. Examines theories about language contact, and linguistic changes in Spanish phonology and grammar.

205 Spanish Dialectology (4) S. Phonological, morphological, and syntactic variations in Spanish as spoken in the Hispanic world, from synchronic and diachronic points of view. The study of Spanish as spoken in the United States.

212 Studies in Medieval Iberia (4) F. May be repeated for credit as topics vary.

214 Studies in Golden Age Literature and Culture (4) W. May be repeated for credit as topics vary.

218 Studies in Enlightenment and Romanticism (4) F. May be repeated for credit as topics vary.

219 Studies in Nineteenth Century (4) S. May be repeated for credit as topics vary.

220 Studies in Twentieth Century (4) W. May be repeated for credit as topics vary.

221 Topics in Iberian Studies (4) S. Cross-cultural connections and interactions between different ethnicities in the Iberian Peninsula. May be repeated for credit as topics vary.

231 Studies in Colonial Latin America (4) W. May be repeated for credit as topics vary.

232 Studies in Nineteenth-Century Latin America (4) S. May be repeated for credit as topics vary.

233 Studies in Twentieth-Century Latin America (4). May be repeated for credit as topics vary.

234 Topics in Latin America (4) S. Special topics in Latin American literatures and cultures. Topics may cover areas such as gender, national literatures, mass culture, ethnicity, and others. May be repeated for credit as topics vary.

235 Topics in Trans-Oceanic Studies (4) F. Focuses on meaningful connections between different geographical and cultural areas. May be repeated for credit as topics vary.

239A-B Introduction to Literary Theory I-II (4-4) F. May be repeated for credit as topics vary.

239C Special Topics in Theory (4). F, W, S. Focus on issues related to critical theory, theory of literature, cultural criticism and visual arts as they pertain specifically to Latin America, Spain, Portugal, and Brazil. Topics vary. Examples: Latin American cultural studies; theory, film, and media in postwar Spain.

245 Studies in Luso-Hispanic Film (4) F. May be repeated for credit as topics vary.

251 Studies in Chicano Literature and Culture (4) W. May be repeated for credit as topics vary.

252 Studies in U.S. Latino Literature and Culture (4) F. May be taken for credit as topics vary.

260 Seminar in Spanish (4) W. Topics vary. May be repeated for credit when topic changes.

270 Creative Writing Workshop in Spanish/English (4) F, W, S. Discussion of theory and practice of creative writing. Focus on critical analysis of participant's work in progress. Texts may be written in Spanish and/or English and may be written in poetry or prose format. May be repeated for credit as topics vary. Prerequisite: consent of graduate advisor.

290 Individual Study (4) F, W, S. May be repeated for credit as topics vary.

291 Directed Reading (4) F, W, S. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

292 Teaching Practicum (4) F, W, S. Satisfactory/Unsatisfactory only.

293 Creative Writers' Project Consultation (4) F, W, S. May be repeated for credit as topics vary.

299 Dissertation Research (4 to 12) F, W, S. Satisfactory/Unsatisfactory only.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. May be repeated for credit.

Courses in Portuguese

***(Schedule of Classes* designation: Portug)**

LOWER-DIVISION

1A-B-C Fundamentals of Portuguese (4-4-4) F, W, S. Basic grammar, conversation, and composition with an initial exposure to the varied cultures of the Portuguese-speaking world. (1C: **VI**)

2A-B-C Intermediate Portuguese (4-4-4). Conversation, reading, and composition skills are developed using texts of literary and social interest. Emphasis on grammar and review. Prerequisites for 2A: Portuguese 1C with a grade of C or better or the equivalent, or consent of instructor; for 2B: Portuguese 2A with a grade of C or better, or equivalent; for 2C: Portuguese 2B with a grade of C or better, or equivalent. **(VIII)**

UPPER-DIVISION

120A, B, C Introduction to Portuguese and Brazilian Literature (4, 4, 4) F, W, S. General introduction to selected authors and works in relation to literary currents and to specific historical and cultural contexts. Taught in Portuguese. **120A:** Middle ages to eighteenth century. **120B:** Nineteenth century. **120C:** Twentieth century. Prerequisite: Portuguese 2C with a grade of C or better or the equivalent, or consent of instructor. **(VIII)**

121 Topics in Luso-Brazilian Literature (4) F, W, S. In English. Contextualized study of a major author, current, or genre in Brazilian, Portuguese, and/or Lusophone African literature. Examples: Gender, Race, and Sexualities in Postcolonial Lusophone Literatures; Women and Writing in Brazil and Portugal; The Short Story. May be repeated for credit as topics vary. **(VIII)**

190 Individual Studies (4-4-4) F, W, S

GRADUATE

243 Studies in Luso-Brazilian Literature and Culture (4) F. May be repeated for credit as topics vary.

290 Individual Study (4) F, W, S

GRADUATE PROGRAM IN VISUAL STUDIES

2000 Humanities Gateway; (949) 824-9431, 824-1124
Felicidad "Bliss" Cua Lim, **Director**

Faculty

Eyal Amiran, Ph.D. University of Virginia, *Associate Professor of Comparative Literature and of Film and Media Studies* (digital media theory, twentieth-century literature, narrative and textual theory, psychoanalysis, modern and postmodern intellectual history)

George Bauer, Ph.D. Princeton University, *Professor Emeritus of Art History* (Renaissance and Baroque)

Linda Freeman Bauer, Ph.D. Institute of Fine Arts, New York University, *Professor Emerita of Art History* (Renaissance and Baroque)

Catherine L. Benamou, Ph.D. New York University, *Associate Professor of Film and Media Studies* (Latin American and Latina/Latino film and television; inter-American representation; Orson Welles and off-Hollywood cinema, 1940s–1970s; film historiography; transnational media theory, and community practice)

Julia Bryan-Wilson, Ph.D. University of California, Berkeley, *Associate Professor of Art History* (contemporary art and visual culture, feminist and queer theory, performance, video)

Bridget R. Cooks, Ph.D. University of Rochester, *Assistant Professor of African American Studies and Art History* (African American art and culture, Black visual culture, museum criticism, film, feminist theory and postcolonial theory)

Sohail Daulatzai, Ph.D. University of Southern California, *Assistant Professor of Film and Media Studies* (cultural studies, postcolonial theory, race, internationalism, cultural politics of hip-hop, sports, cinema)

Edward Dimendberg, Ph.D. University of California, Santa Cruz, *Associate Professor of Film and Media Studies* (film history, audio-visual media and the built environment, contemporary architecture and urbanism, avant-garde cinema, modernism and modernity)

Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History* (Byzantine and Medieval art and architecture)

Kristen Hatch, Ph.D. University of California, Los Angeles, *Assistant Professor of Film and Media Studies* (American film history, histories of gender and sexuality, childhood studies, censorship, and reception studies)

James D. Herbert, Ph.D. Yale University, *Professor of Art History* (Modern European art)

Lucas Hilderbrand, Ph.D. New York University, *Assistant Professor of Film and Media Studies* (histories of technology, copyright, documentary, queer cultures and media, obscenity, and video art)

Judy C. Ho, Ph.D. Yale University, *Professor Emerita of Art History* (Chinese art, archaeology, common religion, Buddhist art)

Victoria E. Johnson, Ph.D. University of Southern California, *Department Chair and Associate Professor of Film and Media Studies* (history and critical theory of U.S. television, popular film, and media; politics of geography, race, gender, and sexuality in popular culture; cultural studies)

Peter Krapp, Ph.D. University of California, Santa Barbara, *Associate Professor of Film and Media Studies and of English* (digital culture, media history, cultural memory, history and theory of artificial worlds)

Felicidad "Bliss" Cua Lim, Ph.D. New York University, *Director of the Graduate Program in Visual Studies and Acting Associate Professor of Film and Media Studies* (Philippine cinema; temporality; postcolonial studies; feminist film theory; fantastic cinema; politics of genre; taste cultures)

Catherine Liu, Ph.D. City University of New York Graduate School and Center, *Director of the Humanities Center and Associate Professor of Film and Media Studies, Comparative Literature, and English* (critical theory, visual and literary culture, psychoanalysis, narrative theory and melodrama in film and literature, New Waves, cultural revolutions)

Lyle Massey, Ph.D. University of California, Los Angeles, *Associate Professor of Art History* (Renaissance and early modern art)

Margaret M. Miles, Ph.D. Princeton University, *Professor of Art History and Classics* (Greek and Roman art, archaeology)

Glen Mimura, Ph.D. University of California, Santa Cruz, *Associate Dean of Graduate Study and Research and Associate Professor of Film and Media Studies* (minority, diasporic, and third cinemas; cultural studies of media, nationalism and globalization, queer theory and racialized sexuality)

Alka Patel, Ph.D. Harvard University, *Assistant Professor of Art History* (Asian art, South Asian architecture)

Mark S. Poster, Ph.D. New York University, *Professor Emeritus of Film and Media Studies and of History* (modern European intellectual history, media studies)

Amy Powell, Ph.D. Harvard University, *Assistant Professor of Art History* (Northern European art and visual culture, 1300–1700)

Fatimah Tobing Rony, Ph.D. Yale University, *Associate Professor of Film and Media Studies* (documentary and ethnographic film, race and representation, postcolonial studies, film history and theory, film production)

Sally A. Stein, Ph.D. Yale University, *Professor Emerita of Art History* (American art, photography and mass media, feminist theory)

Dickran Tashjian, Ph.D. Brown University, *Professor Emeritus of Art History* (American art and literature, American and European avant-garde, art and technology)

Cécile Whiting, Ph.D. Stanford University, *Department Chair and Professor of Art History* (American art and culture)

Bert Winther-Tamaki, Ph.D. Institute of Fine Arts, New York University, *Associate Professor of Art History* (Modern Japanese art, Asian American art, art and nationalism)

Roberta Wue, Ph.D. Institute of Fine Arts, New York University, *Assistant Professor of Art History* (modern Chinese visual culture)

Affiliated Faculty

Ackbar Abbas, M. Phil. University of Hong Kong, *Department Chair and Professor of Comparative Literature and Professor of Film and Media Studies* (globalization, Hong Kong and Chinese culture, postcoloniality, critical theory)

David Carroll, Ph.D. The Johns Hopkins University, *Professor Emeritus of French* (literary theory and twentieth-century French literature)

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Department Chair of Women's Studies and Associate Professor of Women's Studies and Comparative Literature* (feminist epistemologies and theories, cultural studies, ethnic studies)

Kyung Hyun Kim, Ph.D. University of Southern California, *Associate Professor of East Asian Languages and Literatures* (East Asian cinema, modern Korea, cultural theory)

Susan B. Klein, Ph.D. Cornell University, *Associate Professor of Japanese* (premodern and modern theatre and dance, Japanese religions, feminist critical theory)

Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (critical theory, feminism, photography)

Julia Reinhard Lupton, Ph.D. Yale University, *UCI Chancellor's Fellow, Director of the Humanities Core Course, and Professor of English, Comparative Literature, and Education* (Renaissance literature, literature and psychology)

William M. Maurer, Ph.D. Stanford University, *Department Chair and Professor of Anthropology* (anthropology of law, globalization, transnationalism, citizenship and nationalism, finance capital, identity, Caribbean)

Alejandro Morales, Ph.D. Rutgers University, *Professor of Chicano/Latino Studies and Spanish* (Latin American and Chicano literature, film studies, creative writing)

Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (eighteenth- through twentieth-century Spanish literature; film and visual arts; aesthetics and contemporary culture)

Robert F. Nideffer, Ph.D. University of California, Santa Barbara, *Professor of Studio Art* (virtual environments and behavior, interface theory and design, technology and culture, contemporary social history, gaming studies)

Nancy Lee Ruyter, Ph.D. Claremont Graduate School, *Professor of Dance* (dance history, Spanish dance, choreography, and research methods)

Jared Sexton, Ph.D. University of California, Berkeley, *Associate Professor of African American Studies and of Film and Media Studies* (race and sexuality, policing and imprisonment, contemporary U.S. cinema and political culture, multiracial coalition, critical theory)

Jonathan M. Wiener, Ph.D. Harvard University, *Professor of History* (recent American history, theory and history)

Graduate Program

The graduate program in Visual Studies, administered jointly by the faculties of the Department of Art History and the Department of Film and Media Studies, offers students the opportunity to pursue a doctorate in the cultural analysis of visual artifacts and experiences. Visual Studies synthesizes methodological insights from both component disciplines in order to examine the social practices of visual representation and visuality itself. The program leads to a Ph.D. degree in Visual Studies. While the program (in certain instances) grants an M.A. to students en route to their Ph.D., it admits only those students intending to complete their doctorate at UCI.

In addition, an emphasis in Visual Studies, described later in this section, is available to Ph.D. and M.F.A. students in all departments at UCI.

ADMISSION

The program is open to students applying with either a bachelor's or a master's degree, and applicants must meet the general requirements for admission to graduate study at UCI. A recent sample of academic writing—such as a representative undergraduate paper, or the master's thesis or a major research paper written at the master's level—should be submitted with the application packet.

The deadline for application is December 15, and the program accepts applicants for admission for the fall quarter only. Additional information is available from the Director of the Visual Studies program.

LANGUAGE REQUIREMENTS

All students are required to demonstrate a reading knowledge of at least one foreign language and are strongly encouraged to develop competence in a second. Students consult with the Director and/or their principal advisor(s) to determine the appropriate language on

which the student will be tested, based on their interests and program of study. Advisors, moreover, may require the demonstration of reading knowledge in additional languages according to the scholarly demands of the student's specific field. All language requirements must be satisfied before students are awarded a master's degree or, if they enter with an M.A., before they are advanced to candidacy for the Ph.D. degree.

COURSE REQUIREMENTS

Beyond the core series (Visual Studies 290A-B-C), students are required to complete an additional 11 courses for a total of 14 courses. Out of this total, at least 10 courses (including the core series and Visual Studies 297) must be within the program in Visual Studies, and at least two courses are to be from outside the Visual Studies discipline. In order to establish a level of expertise in one conventionally defined discipline, students must take (among their 10 courses noted above), at least three courses that have a strong component of art history *or* at least three courses that have a strong component of film studies.

Students admitted with an M.A. in a related field may petition the Visual Studies Graduate Committee to have some of their course requirements waived and advance early; such petitions will be considered in close consultation with the primary advisor and on a case-by-case basis (though all students must take the core sequence). While students may accrue units both for University Teaching (Art History 399 or Film and Media Studies 399), and Reading for the Preliminary Examination (Visual Studies 298), these do not count toward the required number of courses.

PRELIMINARY EXAMINATION

By the end of the second year, students must reach agreement with one of the program's professors to serve as principal advisor. During the fall quarter of the following year—in most cases, the final quarter of standard course work—the student will work informally with the principal advisor who will supervise one examination field; two additional faculty members supervising examination fields, at least one of whom must be a member of the Visual Studies faculty; a fourth member from the Visual Studies faculty who will not supervise an examination field but will participate in the oral examination; and a designated "outside" member who must be a member of the UCI faculty but cannot hold either a primary or joint appointment in Visual Studies, Art History, or Film and Media Studies. Except in extraordinary circumstances (to be adjudicated by the program's Graduate Committee), students are required to include at least one member from Art History and one from Film and Media Studies among the three faculty members supervising the examination fields.

The student and principal advisor define three fields to be examined by the faculty. The fields should combine historical breadth and some variety in media. Over the course of the following two quarters, students normally enroll in eight to twelve units per quarter of Reading for the Preliminary Examination (Visual Studies 298) during which time they prepare reading lists in close consultation with their principal advisor and field supervisors, and complete the reading of those lists. The examination takes place near the end of those two quarters of study, normatively at the end of the academic year.

The first part of the examination consists of a written component, in which the student is called upon to respond to questions posed in the three examination fields. The student's written responses are circulated to all committee members. An oral examination follows, normally within two weeks, and consists of questions prompted both by the student's reading lists and by the written examinations. Based on the student's written and oral performance, the committee will determine whether the student has successfully passed the examination. If the committee is not satisfied with the student's performance, it may also decide to reexamine the student on one or more fields after a specific interval. Except in extraordinary circumstances, no student will be given more than two chances to pass any given section of the examination.

The winter quarter after students take their exams, they are required to take Visual Studies 297, a writing practicum in which they finalize a prospectus that defines the scope, approach, and rationale for a proposed dissertation and begin research on the dissertation. The prospectus must be finished by the end of the winter quarter at the latest. Advancement to candidacy for the Ph.D. degree is contingent upon successful completion of this course, and provided that all language requirements have been satisfied. The dissertation committee meets in the spring quarter to review the progress of the student, and recommends advancement at that time. The normative time for advancement to candidacy is four years.

DISSERTATION

The student and the principal advisor consult to determine the composition of a doctoral committee of three members including the principal advisor, which then must unanimously approve the prospectus before the student proceeds with the dissertation. The doctoral committee, on the basis of the candidate's past academic performance and proposed dissertation topic, may require additional course work or other forms of preparation for the dissertation. The doctoral committee, under the direction of the principal advisor, supervises the student's research program and ultimately approves the dissertation. The normative time for completion of the Ph.D. program is seven years, and the maximum permitted is eight years.

GRADUATE EMPHASIS IN VISUAL STUDIES

In addition to the doctoral program in Visual Studies described above, the Program in Visual Studies also offers an emphasis in Visual Studies available to Ph.D. and M.F.A. students in all departments at UCI. Satisfactory completion of the emphasis is certified by the Director of Visual Studies and is noted in the student's dossier.

Admission to the Program

Students must first be admitted to, or currently enrolled in, a Ph.D. or M.F.A. program at UCI. Applicants must submit to the Director of Visual Studies a summary of prior undergraduate and graduate course work related to Visual Studies, institutions attended, and major(s), together with a brief statement of purpose, including career objectives, areas of interest and research, record of research, teaching, professional accomplishments, and/or creative work. Lack of prior course work does not preclude admission, so long as a compelling statement of research interests, congruent with the emphasis, makes the case. Admission to the emphasis is on a rolling basis. The Director tracks students' progress toward fulfillment of the emphasis requirements and meets with students to advise them on a program of study, as required.

Emphasis Requirements

Minimum course work for the graduate emphasis in Visual Studies consists of four courses: Visual Studies 290C and three additional elective Visual Studies seminars.

For doctoral students, the qualifying examination and dissertation topic should incorporate Visual Studies as a central concern. One area of the Ph.D. qualifying examination should be on a Visual Studies topic, and one member of the candidate's qualifying examination committee and dissertation committee is normally a member of the Visual Studies faculty. There are no requirements concerning qualifying examinations or theses for M.F.A. students.

Graduate Courses in Visual Studies

(Schedule of Classes **designation: Vis Std)**

Graduate students may also enroll concurrently in any upper-division lecture course with the approval of the instructor.

290A-B-C Foundations of Visual Studies. A three-quarter series that examines canonical texts and explores current directions in the two disciplines that constitute Visual Studies at UCI (Art History and Film and Media Studies), as well as in Visual Studies as an emergent field in its own right.

290A Art History: Theories and Methods (4)

290B Film and Media Studies: Theories and Methods (4)

290C Visual Studies: Theories and Methods (4)

294 Getty Consortium Seminar (4). Special graduate seminar offered at the Getty Research Institute in Los Angeles, involving faculty and graduate students from the five graduate programs in Art History or Visual Studies located in southern California (UCI, UCLA, UCR, UCSB, and USC). May be repeated for credit as topics vary.

295 Graduate Seminar in Visual Studies (4). May be repeated for credit as topics vary.

296 Directed Reading (4). Directed reading on a specific topic agreed upon by student and instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

297 Writing Practicum (4). Offered winter quarter each year and taught in a workshop format. Assists students with the preparation and revision of the dissertation prospectus so that they may advance to candidacy. Prerequisites: Visual Studies 290A-B-C. Satisfactory/Unsatisfactory only.

298 Reading for the Preliminary Examination (4 to 12). Directed reading in preparation for the preliminary examination. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

299 Dissertation Research (4 to 12). Research and writing of the dissertation. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF WOMEN'S STUDIES

243 Humanities Instructional Building; (949) 824-6406
E-mail: womensstudies@uci.edu
Laura H. Y. Kang, **Department Chair**

Core Faculty

Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Department Chair of Women's Studies and Associate Professor of Women's Studies, Comparative Literature, and English* (feminist epistemologies and theories, cultural studies, ethnic studies)

Lilith Mahmud, Ph.D. Harvard University, *Assistant Professor of Women's Studies* (gender, nationalism, elites, race citizenship, secrecy, transparency, knowledge production, secret societies, power, the anthropology of Europe)

Kavita Philip, Ph.D. Cornell University, *Associate Professor of Women's Studies* (science and technology studies, South Asian studies, political ecology, critical studies of race, gender, colonialism, new media, and globalization)

Jeanne Scheper, Ph.D. University of California, Santa Barbara, *Assistant Professor of Women's Studies* (trans-Atlantic modernism, performance studies, feminist visual culture, critical studies of race, gender, and sexuality)

Jennifer Terry, Ph.D. University of California, Santa Cruz, *Associate Professor of Women's Studies and Comparative Literature* (cultural studies, social theory; science and technology studies, formations of gender and sexuality; critical approaches to modernity; American studies in transnational perspective)

Affiliated Faculty

Dina Al-Kassim, Ph.D. University of California, Berkeley, *Associate Professor of Comparative Literature*

Jonathan Alexander, Ph.D. Louisiana State University, *Campus Writing Coordinator and Associate Professor of English*

Christine B. Balance, Ph.D. New York University, *Assistant Professor of Asian American Studies*

Victoria Bernal, Ph.D. Northwestern University, *Associate Professor of Anthropology*

Sharon B. Block, Ph.D. Princeton University, *Associate Professor of History*

Tom Boellstorff, Ph.D. Stanford University, *Professor of Anthropology*

Julia Bryan-Wilson, Ph.D. University of California, Berkeley, *Associate Professor of Art History*

Kitty C. Calavita, Ph.D. University of Delaware, *UCI Chancellor's Professor of Criminology, Law and Society*

Francesca M. Cancian, Ph.D. Harvard University, *Professor Emerita of Sociology*

Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture*

Bridget R. Cooks, Ph.D. University of Rochester, *Assistant Professor of African American Studies and Art History*

Alice Fahs, Ph.D. New York University, *Director of the Humanities Honors Program and Associate Professor of History*

Susan Greenhalgh, Ph.D. Columbia University, *Professor of Anthropology*

Elizabeth Guthrie, Ph.D. University of Illinois, *Director of the French Language Program and Senior Lecturer with Security of Employment Emerita*

Sora Han, Ph.D. University of California, Santa Cruz, *Assistant Professor of Criminology, Law and Society*

Kristen Hatch, Ph.D. University of California, Los Angeles, *Assistant Professor of Film and Media Studies*

Lucas Hilderbrand, Ph.D. New York University, *Assistant Professor of Film and Media Studies*

Helen Ingram, Ph.D. Columbia University, *Professor Emerita of Planning, Policy, and Design*

Susan Jarratt, Ph.D. University of Texas, Austin, *Professor of Comparative Literature and Education*

Valerie Jenness, Ph.D. University of California, Santa Barbara, *Interim Dean of the School of Social Ecology and Professor of Criminology, Law and Society and of Sociology*

Victoria Johnson, Ph.D. University of Southern California, *Assistant Professor of Film and Media Studies*

Ketu H. Katrak, Ph.D. Bryn Mawr College, *Professor of Humanities and Comparative Literature*

Arlene Keizer, Ph.D. University of California, Berkeley, *Associate Professor of English*

Susan B. Klein, Ph.D. Cornell University, *Associate Professor of Japanese*

Felicidad "Bliss" Cua Lim, Ph.D. New York University, *Acting Associate Professor of Film and Media Studies*

Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art*

William M. Maurer, Ph.D. Stanford University, *Department Chair and Professor of Anthropology*

Jessica Millward, Ph.D. University of California, Los Angeles, *Assistant Professor of History*

Glen Mimura, Ph.D. University of California, Santa Cruz, *Associate Professor of Film and Media Studies*

Laura Mitchell, Ph.D. University of California, Los Angeles, *Associate Professor of History*

Robert G. Moeller, Ph.D. University of California, Berkeley, *Department Chair and Professor of History*

Jane O. Newman, Ph.D. Princeton University, *Director of European Studies and Professor of Comparative Literature*

Carrie J. Noland, Ph.D. Harvard University, *Professor of French*

Margot Norris, Ph.D. State University of New York, Buffalo, *UCI Chancellor's Professor of English and Comparative Literature*

Rachel O'Toole, Ph.D. University of North Carolina at Chapel Hill, *Assistant Professor of History*

Ellen F. Olshansky, D.N.Sc. University of California, San Francisco, *Director of the Program in Nursing Science and Professor, Nursing Science Program*

R. Radhakrishnan, Ph.D. State University of New York, Binghamton, *Professor of English and Comparative Literature*
Nasrin Rahimieh, Ph.D. University of Alberta, *Director of the Dr. Samuel M. Jordan Center for Persian Studies and Culture, Professor of Comparative Literature, and Maseeh Chair in Persian Studies and Culture*
Amelia C. Regan, Ph.D. University of Texas, Austin, *Professor of Computer Science*
Janelle Reinelt, Ph.D. Stanford University, *Professor Emerita of Drama*
Bryan Reynolds, Ph.D. Harvard University, *Professor of Drama*
Belinda Robnett, Ph.D. University of Michigan, *Associate Professor of Sociology*
Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer with Security of Employment Emerita, Management*
Vicki Ruiz, Ph.D. Stanford University, *Dean of the School of Humanities and Professor of History*
Sharon Salinger, Ph.D. University of California, Los Angeles, *Dean of Undergraduate Education and Professor of History*
Connie Samaras, M.F.A. Eastern Michigan University, *Professor of Studio Art*
Annette Schlichter, Ph.D. Humboldt University of Berlin, *Associate Professor of Comparative Literature*
Gabriele Schwab, Ph.D. University of Konstanz, *UCI Chancellor's Professor of Comparative Literature*
John H. Smith, Ph.D. Princeton University, *Department Chair and Professor of German, and Professor of Comparative Literature*
Sally A. Stein, Ph.D. Yale University, *Professor Emerita of Art History*
Ulrike Strasser, Ph.D. University of Minnesota, *Associate Professor of History*
Katherine Tate, Ph.D. University of Michigan, *Professor of Political Science*
Heidi Tinsman, Ph.D. Yale University, *Associate Professor of History*
Deborah R. Vargas, Ph.D. University of California, Santa Cruz, *Assistant Professor of Chicano/Latino Studies*
Linda Trinh Võ, Ph.D. University of California, San Diego, *Associate Professor of Asian American Studies*
Anne Walthall, Ph.D. University of Chicago, *Co-Director of the Minor in Asian Studies and Professor of History and of East Asian Languages and Literatures*
Tiffany Willoughby-Herard, Ph.D. University of California, Santa Barbara, *Assistant Professor of African American Studies*
Hu Ying, Ph.D. Princeton University, *Associate Professor of Chinese*
Mei Zhan, Ph.D. Stanford University, *Associate Professor of Anthropology*

UCI's Department of Women's Studies is dedicated to the study of women, gender, and sexuality in their complex articulation with race, ethnicity, class, religion, and nationality. The Department's goal is to foster critical and creative analysis of the various disciplinary perspectives—historical, political, economic, representational, technological, and scientific—that have constituted women, gender, and sexuality as objects of study. By emphasizing a rigorous interdisciplinary perspective in their teaching and research, the Women's Studies faculty seek to produce new knowledge about the social meanings of gender, race, class, and sexuality, and to equip students with a range of analytical and methodological skills.

The field of women's studies has developed at a phenomenal rate from a handful of student-initiated courses in the early 1970s to more than 600 programs in colleges and universities across the United States offering degrees at the B.A., M.A., and Ph.D. levels. UCI's Department of Women's Studies was founded as a program in 1975 and has grown significantly since that time. The Department offers a B.A. degree in Women's Studies, a minor in Women's Studies, a minor in Queer Studies, and a graduate emphasis in Feminist Studies.

Women's Studies provides a unique intellectual community for undergraduate and graduate students, where faculty and students share a commitment to interactive teaching and learning. Students work closely with faculty and the Department's academic coordinator to plan a coherent program of study and to anticipate work toward advanced degrees and a wide variety of career options.

CAREER OPPORTUNITIES

A degree in Women's Studies prepares students for the expanding opportunities available in graduate programs and in numerous careers in both the public and private sectors. As more women work, business and corporations find the need for increased knowledge about women, and the growth of women's organizations and agencies—at the local, national, and global levels—is creating new opportunities for graduates with specializations in Women's Studies. Graduates bring unique skills and knowledge to the professions of law, medicine, social work, teaching, counseling, and to government service, all of which increasingly require expertise on issues concerning women and gender. Students of Women's Studies develop critical and analytical skills which prove valuable in the full range of life choices.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. In addition, the Women's Studies Office provides more specialized career counseling and information on graduate programs in Women's Studies and related fields.

Undergraduate Program

REQUIREMENTS FOR THE B.A. DEGREE IN WOMEN'S STUDIES

University Requirements: See pages 55–62.

School Requirements: See pages 253–254.

Departmental Requirements for the Major

A. Three introductory core courses: Women's Studies 50A, plus two selected from 50B, 50C, 60A, 60B, 60C.

B. Three advanced core courses: one each from the Women's Studies 100, 110, and 120 series.

C. Four elective advanced core courses selected from Women's Studies 139–168.

D. Two additional advanced elective courses selected from Women's Studies 170–190. Students may request, by petition, one lower-division course to count in this category. This course should be primarily centered on the study of women, gender, and/or feminism.

E. Women's Studies 197 (Senior Seminar in Women's Studies).

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI.

Requirements for the Minor

A. Three lower-division courses selected from Women's Studies 50A, 50B, 50C, 60A, 60B, 60C.

B. Two upper-division courses selected from Women's Studies 100A, 100B, 100C, 110A, 110B, 110C, 120A, 120B, 120C, 139, 155, 156A, 156B, 157A, 157B, 158A, 158B, 165A, 165B, 165C, 165D, 165E, 165F, 166A, 167A, 167B, 168A, 168B.

C. Two advanced elective courses selected from Women's Studies 170–190.

Residence Requirement for the Minor: A minimum of four upper-division courses required for the minor must be completed successfully at UCI. By petition, two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

MINOR IN QUEER STUDIES

The Women's Studies Department offers a minor in Queer Studies. Taking as a point of departure that sexuality is a complex historical and cultural phenomenon, Queer Studies examines this complexity, drawing upon methods from anthropology, art, art history, biology, history, literature, philosophy, psychology, and sociology. Interdisciplinary insights from area studies, cultural studies, critical legal studies, ethnic studies, gender studies, religious studies, science and technology studies, visual studies, and women's studies also enrich this area of study.

Requirements for the Minor

A. Two lower-division introductory courses: Women's Studies 20 plus one course selected from Women's Studies 50A, 50B, 50C, 60A, 60B, 60C, or Sociology 69 (when topics address the sociology of sexuality).

B. Two upper-division core courses: Women's Studies 157A and 157B.

C. Three upper-division courses selected from the following: Anthropology 129 (when topics address issues of sexuality and gender), 139 (when topics address issues of sexuality and HIV/AIDS); Drama 103 (when topics cover the representation of gays and lesbians in drama); English 105 (when topics cover issues of gays and lesbians in literature); Film and Media Studies 112 (when topics address issues of sexuality in representation and theory), 190 (when topics address issues of sexuality in representation and theory); History 146D, 146E, 169 (when topics address gender and sexuality in Latin America); Spanish 185 (when topics cover issues of sexuality in peninsular Spain and/or Portugal), 186 (when topics cover issues on sexuality in Latin American literature and culture); Women's Studies 100A, 100B, 100C, 110A, 110B, 110C, 120A, 120B, 120C, 165A, 165B, 167B, 168B, 190.

Residence Requirement for the Minor: A minimum of four upper-division courses required for the minor must be successfully completed at UCI. Two of the four may be taken through the UC Education Abroad Program, provided course content is approved in advance by the appropriate department chair.

Graduate Emphasis in Feminist Studies

The Department of Women's Studies offers an emphasis in Feminist Studies, which is available to all graduate students at UCI. Satisfactory completion of the emphasis is certified by the Chair of Women's Studies and is noted in the student's dossier.

Admission to the Program

Applicants must first be admitted to, or currently enrolled in, one of the participating programs noted above, and must have taken Women's Studies 200A or 200B. Applicants must submit the following to the Women's Studies Graduate Program Committee: (1) an application form listing prior undergraduate and graduate course work related to Feminist Studies, institutions attended, and majors(s); (2) a one- to two-page statement of purpose, including career objectives, areas of interest and research, record of research, teaching, community, and/or creative work; and (3) a sample of work related to Feminist Studies, e.g., a substantial paper (10-page minimum), video, or other creative work.

The Committee determines admissions, in consultation with the Women's Studies Core Faculty, based upon the extent to which the applicant's research interests relate to Feminist Studies, the applicant's previous course work, and research or other experience related to Feminist or Women's Studies. Lack of prior course work does not preclude admission, so long as a compelling statement of research interests congruent with the graduate emphasis makes the case.

Emphasis Requirements

Minimum course work for the graduate emphasis in Feminist Studies consists of four courses: two core courses, Women's Studies 200A-B, a coherent sequence normally taken in consecutive quarters; and any two courses selected from the list of courses in Feminist Studies approved by the Committee, as long as one of these is a graduate course in the student's own department or area of interest. In keeping with the interdisciplinary focus of this emphasis, it is highly recommended that the other be a course from a discipline outside that department or area. The course requirements for Ph.D. and M.F.A. candidates are the same.

For doctoral students, the qualifying examination and dissertation topic should incorporate gender as a central category of analysis. One member of the candidate's qualifying examination committee and of the candidate's dissertation committee is normally a member of the Women's Studies and affiliate faculty. There are no requirements concerning qualifying examinations or theses for M.F.A. students.

Courses in Women's Studies

***(Schedule of Classes* designation: Womn St)**

LOWER-DIVISION

INTRODUCTORY CORE COURSES

Courses of general interest for all students. No prerequisites. Designed to survey and to introduce methods and premises of interdisciplinary studies. Many of these courses fulfill part of the UCI general education requirement.

20 Introduction to Queer Studies (4). Study of sexuality from the perspective of lesbian, gay, queer, transgender scholarship spanning humanities, social sciences, arts. **(IV, VII)**

50A Gender and Feminism in Everyday Life (4). What is gender? Why does studying it matter? Explores how feminism has understood not only gender as a category of social analysis, but how gender structures personal identities, family, citizenship, work and leisure, social policy, sexuality, and language. **(IV, VII)**

50B Reproducing and Resisting Inequality (4). From bedroom to boardroom to voting booth to international division of labor, how are societal institutions and politics "gendered"? Examines relationships of gender, race, ethnicity, class, and region in sexual and reproductive experiences, households, education, work, and politics, including community activism. **(IV, VII)**

50C Gender and Popular Culture (4). An investigation of gender, race, and sexuality in film, TV, video, music, and advertising, with attention to the ways that popular culture shapes understandings of technology, national identities, leisure and work, historical memory, international communication, and multicultural representation. **(IV, VII)**

60A Gender and Science (4). Examines science from a variety of feminist viewpoints in order to explore how science influences everyday life. Special attention is given to the ways science shapes our understanding of gender, race, and sexuality. **(III)**

60B Gender and Law (4). Introduction to the relationship between gender, race, sexuality, and the law. Critical thinking about how law defines citizenship, political representation, and democracy, focusing on the history of legal reform undertaken in the name of women as a social group. **(III)**

60C Gender and Religion (4). Introduces the topic of religion in a feminist context by performing cross-cultural exploration of gender, authority, and faith in various traditions. Study includes (but is not limited to) writings of contemporary Jewish, Christian, and Muslim feminists. **(III, VIII)**

70 Special Topics in Gender (4). Topics cover issues which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

UPPER-DIVISION

Courses in which students gain experience in analysis, interpretation, and writing.

ADVANCED CORE COURSES

100: THEORY, KNOWLEDGE, CULTURE

100A Producing Feminist Knowledge (4). Explores alternative ways that feminist scholars frame research questions, conduct research or creative activity. Examines challenges that feminist scholarship poses to the academy and the challenges the academy poses to feminist scholars. Prerequisite: one course from Women's Studies 20, 50A, 50B, 50C, 60A, 60B, or 60C.

100B Feminist Theory (4). Introduction to historical traditions in theory and various conceptual frameworks informing Women's Studies' scholarship. Concepts include (but are not limited to) identity, representation, and political economy. Prerequisite: one course from Women's Studies 20, 50A, 50B, 50C, 60A, 60B, or 60C.

100C Key Concepts in Feminist Cultural Studies (4). Investigation of the theories and methods that inform the feminist study of culture. Focuses on the interpretation of the visual arts and literature created by, and predominantly for, women. Prerequisite: one course from Women's Studies 20, 50A, 50B, 50C, 60A, 60B, or 60C.

110: UNDERSTANDING POWER AND GENDER

110A Gender, State, and Nation (4). Examination of gender and sexuality in relation to the production of identities created through participation in state and nation. Examines complexity of relationship between feminism and nationalism, feminism and the state. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

110B Money, Sex, and Power (4). Examination of gender and sexuality in relation to the emergence of the modern world, modernity, and capitalism; commodification, circulation, and transnational exchanges relating to race, gender, class, sexuality, religion, and nationality. Previous lower-division course work in Women's Studies is recommended, but not required.

110C Producing Gender Transnationally (4). Examination of how ideas and formations of gender cross national and international boundaries; encounters between feminist and sexual identity movements; how terms such as "sex" and "gender" change meanings according to time and place. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

120: INTERPRETING BODIES AND PLEASURES

120A Modern Pleasures: Bodies and Practices (4). Focus on the theory and history of pleasure within academic disciplines as well as in social and cultural processes and networks. Previous lower-division course work in Women's Studies is recommended, but not required.

120B Image Problems: Stereotypes and Representations (4). Examination of scholarly approaches to gender stereotypes and politics of representation as they present possibilities for critical analysis and produce problems and limitations; how powerful ideas of gender intersect with other forms of social differentiation such as race and class. Previous lower-division course work in Women's Studies is recommended, but not required. **(VII)**

120C Engendering Colonial Bodies (4). Examination of the production of gender and sexuality in the contexts of colonialism and modernization; representations of colonialist and nationalist struggles over gender and race; female bodies as sites of contestation. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

ADVANCED ELECTIVE CORE COURSES

139 Topics in Gender Studies (4). Various topics in gender studies. Includes issues of gender, culture, race and class, including issues of sexualities and social justice. Previous lower-division course work in Women's Studies is recommended, but not required. Prerequisite: satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. **(VII)**

155 Special Topics in Women's Studies (4). Designed to provide students with an opportunity to do advanced work in Women's Studies. Previous lower-division course work in Women's Studies is recommended, but not required. May be repeated for credit as topics vary.

156: GENDER AND RACE STUDIES

156A Race and Gender (4). Examines the roles and intersections of racism, sexism, and heterosexism in U.S. culture and society. Through history and literature, explores the process of immigration, colonization (of identity, language, and the body), and cultural interaction. Previous lower-division course work in Women's Studies is recommended, but not required. **(VII)**

156B Gender, Race, and the Built Environment (4). Examination of the ways in which houses, buildings, streets, cities, and indeed all social spaces reveal cultural conceptualizations of gender and sexuality in relation to other social relations and processes. Previous lower-division course work in Women's Studies is recommended, but not required. **(VII)**

157: QUEER STUDIES

157A Topics in Lesbian and Gay Studies (4). Explores issues in lesbian and gay studies from one or more of the following perspectives: theoretical, historical, legal, economic, political, sociological, and representation in the arts. Previous lower-division course work in Women's Studies is recommended, but not required. May be repeated for credit as topics vary. **(VII)**

157B Queer Lives and Knowledges (4). Explores the emergence and historical elaboration of non-normative sexual identities, practices, and communities; focuses on medical, legal, literary, aesthetic, scientific, and religious notions about homosexuality and appropriations and subversions of these notions by queer people. Previous lower-division course work in Women's Studies is recommended, but not required.

158: GENDER AND THE PRODUCTION OF KNOWLEDGE

158A Gender and the Politics of Information (4). Investigates from feminist perspectives the challenges in the "information age" and its embedded gender and political dimensions. Examines the increasingly complex identification, evaluation, application, and transmission of information. Previous lower-division course work in Women's Studies is recommended, but not required. **(VII)**

158B Defining Women of Color (4). Examination of women of color as a historical movement emerging as a result to anti-racist struggle in the late twentieth century; who counts as a woman of color, who is included and excluded, the advantages and limitations of this approach to racism. Previous lower-division course work in Women's Studies is recommended, but not required. **(VII)**

165: GENDER AND SCIENCE

165A Gender, Biology, and Environmental Ethics (4). What is "nature" and how do we know and represent it? Introduces students to the history of "nature" produced within scientific knowledge, as well as historical developments. Previous lower-division course work in Women's Studies is recommended, but not required. Same as Public Health 145.

165B HIV/AIDS (4). Explores HIV/AIDS from a feminist perspective focusing on cultural and political-economic analysis and representations of the disease both within the U.S. and globally. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

165C New Reproductive Technologies (4). Examination of representation, implication, and bioethics of new reproductive technologies in different cultures; effects of new reproductive technologies on identities and bodies. Previous lower-division course work in Women's Studies is recommended, but not required.

165D Gender and Science in Colonial India (4). Examination of British colonial policies and politics of science and gender in India; comparison of British India with other colonial contexts; importance of science for colonial rule and history of colonial science and technology. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

165E Gender and Cyberspace (4). How has gender and sexuality been produced in the cyberspace frontier during its brief but volatile history? Takes an interdisciplinary approach to this question that engages with debates in urban studies, history of science, anthropology, and political ecology. Previous lower-division course work in Women's Studies is recommended, but not required.

165F Gender and Technology (4). Using a variety of disciplinary methods, examines how various technological processes and products produce culturally complex meanings associated with gender and technology. Previous lower-division course work in Women's Studies is recommended, but not required.

166: GENDER AND RELIGION

166A Contemporary Issues in Gender and Islam (4). Exploration of lives of Muslim women in different cultural contexts; critical examination of various Islamic constructions and interpretations of gender, sexuality, and human nature. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

167: THE POLITICAL ECONOMY OF GENDER

167A Militarism and Gender (4). Feminist approach to militarism, war, and political violence drawing on representations of women as both victims of and participants in military violence; effects of militarism on formations of gender; effects of military industrial complex on nationalism and identity. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

167B Sexual Traffic (4). Interdisciplinary approaches to understanding the concept of "sexual traffic" as it impacts the formation of sexualized bodies and sexual subjects within and across national boundaries. Previous lower-division course work in Women's Studies is recommended, but not required. **(VIII)**

168: GENDER AND CULTURAL STUDIES

168A Music and Audio Cultures (4). Examination of the significance of gender, power, and identity in music and audio cultures; changing technologies and connections to gender; political economy of music and audio cultures; representation of women in popular music; performance and reception across different cultures. Previous lower-division course work in Women's Studies is recommended, but not required. **(VII)**

168B The Politics of Style (4). Examination of the emergence of style and lifestyle in relation to gender and sexuality; analysis of subcultures, politics, and representation of style in relation to formation of social identities. Previous lower-division course work in Women's Studies is recommended, but not required.

ADVANCED ELECTIVE COURSES

170 Gender, Feminism, Literature, and Language (4). Topics cover issues in language and literature which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

171 Gender, Feminism, and History (4). Topics cover issues in history which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

173 Gender, Feminism, and Philosophy (4). Topics cover issues in philosophy which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

174 Gender, Feminism, and the Arts (4). Topics cover issues in the arts which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

175 Gender, Feminism, and the Media (4). Topics cover issues in the media which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

180 Gender, Feminism, and Anthropology (4). Topics cover issues which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

181 Gender, Feminism, and Cognitive Psychology (4). Topics cover issues in cognitive psychology which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

182 Gender, Feminism, and Economics (4). Topics cover issues in economics which relate to women and gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

183 Gender, Feminism, and Sociology (4). Topics cover issues in sociology which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

184 Gender, Feminism, and Political Science (4). Topics cover issues in political science which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

185 Gender, Feminism, and Social Sciences (4). Topics cover issues in social sciences which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

187 Gender, Feminism, and Social Ecology (4). Topics cover issues in social ecology which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

188 Gender, Feminism, and Science (4). Topics cover issues in science which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

189 Gender, Feminism, and Interdisciplinary Studies (4). Topics cover issues in interdisciplinary studies which relate to women or gender, or which are taught from a feminist methodological perspective. May be repeated for credit as topics vary.

190 Topics in Queer Studies (4). Topics cover issues in the humanities, social sciences, sciences, and arts that relate to critical inquiry of sexuality. May be repeated for credit as topics vary.

197 Senior Seminar in Women's Studies (4) S. Students read advanced scholarship in Women's Studies and complete a major seminar paper. Prerequisites: open to majors only; satisfactory completion of the upper-division writing requirement or consent of instructor. **(VII)**

198 Directed Group Study (4). Special topics through directed reading. Paper required. Prerequisite: consent of instructor.

199 Directed Research (1 to 4) F, W, S. Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisite: consent of sponsoring faculty member.

GRADUATE

200A Feminist Knowledge and Social Change (4). Provides a broad and introductory overview of Women's Studies and feminist knowledges, including key concepts, theoretical frameworks, disciplinary approaches and methods, and critical debates that have shaped the field. May be taken for credit twice.

200B Problems in Feminist Research (4). Colloquium on analytic approaches to interdisciplinary feminist research in Women's Studies and exploration of how feminist knowledges are produced in different academic disciplines. Prerequisite: Women's Studies 200A or consent of instructor. May be taken twice for credit.

201 Special Topics in Feminist Studies (4). Seminars on various topics in feminist studies. May be repeated for credit as topics vary.

210A Graduate Feminist Theory (4). In-depth introduction to various theoretical frameworks that have and continue to inform scholarship in Women's Studies including (but not limited to) identity, representation, and political economy. May be repeated for credit as topics vary.

260A Advanced Seminar in Feminist Studies (4). Graduate seminar covering various areas of research within Women's Studies as an interdisciplinary field. Recommended for advanced graduate students. May be taken for credit three times as topics vary.

290 Directed Research (2 to 12). Directed graduate study/research in Women's Studies. May be taken for credit for a total of 24 units.

399 University Teaching (4). Limited to Teaching Assistants. Satisfactory/Unsatisfactory only. May be repeated for credit.

DONALD BREN SCHOOL OF INFORMATION AND COMPUTER SCIENCES

Hal S. Stern, **Dean**

6210 Donald Bren Hall
Academic Counseling: (949) 824-5156
http://www.ics.uci.edu/

Faculty

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Lubomir Bic, Ph.D. University of California, Irvine, *Department Chair and Professor of Computer Science, and Professor of Electrical Engineering and Computer Science and of Biomedical Engineering*

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Judy Olson, Ph.D. University of Michigan, *Donald Bren Professor of Informatics*

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Deva Ramanan, Ph.D. University of California, Berkeley, *Assistant Professor of Computer Science*

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Padhraic Smyth, Ph.D. California Institute of Technology, *Professor of Computer Science and of Biomedical Engineering*

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Xiaohui Xie, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Computer Science*
Yaming Yu, Ph.D. Harvard University, *Assistant Professor of Statistics*
Zhaoxia Yu, Ph.D. Rice University, *Assistant Professor of Statistics*
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Overview

The Donald Bren School of Information and Computer Sciences (Bren ICS) embodies excellence, creativity, and collaborative innovation in computer science and information technology. From its inception 40 years ago to its current status as the only independent computing school in the University of California system, Bren ICS is well-positioned to continue its tradition of exploring and advancing the boundaries of a broad, multidisciplinary field on a national and international scale.

A $20-million endowment from The Irvine Company Chairman Donald Bren in 2004 drives the School's vigorous recruitment and retention of distinguished faculty scholars. The faculty have extensive training in traditional computer science, as well as engineering, mathematics, the arts, and the social sciences. The School's stand-alone structure, as opposed to being part of an engineering school, enables the faculty to take the broadest possible view of computer science and information technology studies. This breadth is reflected in the diverse set of academic degree options for undergraduates and graduates, some which are interdisciplinary and jointly administered with other academic units.

The School's three departments, Computer Science, Informatics, and Statistics, fuel a wide range of instructional and research efforts including: computer architecture and embedded systems; security, privacy, and cryptography; programming languages and compilers; artificial intelligence and machine learning; visual computing; biomedical informatics; scientific computing; theory of computing; statistics; information access and management; software and information systems design, and engineering; interactive and collaborative technology; ubiquitous computing; operations research and arts computation engineering. The vibrant Bren ICS community continues to explore innovative topics ranging from building complete computer systems on chips smaller than a human fingernail to developing user interface systems that allow engineers on opposite sides of the world to collaborate effectively. Bren ICS research continues to focus on how computing and information technology can be used to solve a broad set of real-world problems such as improving how first responders communicate during a crisis, optimizing transportation systems, analyzing data to expedite biological research, and improving network security.

Faculty are active participants and leaders of numerous research institutes spanning computer science, including the Ada Byron Research Center (ABRC); Institute for Genomics and Bioinformatics (IGB); Institute for Software Research (ISR); Center for Games and Virtual Worlds; Center for Embedded Computer Systems (CECS); Center for Ethnography; Center for Interactive Knowledge and Design; California Institute for Telecommunications and Information Technology (Calit2); Center for Machine Learning and Data Mining; Center for Organizational Research; Center for Research on Information Technology and Organizations (CRITO); Genetic Epidemiology Research Institute; Center for Pervasive Communications and Computing (CPCC); Laboratory for Ubiquitous Computing and Interaction (LUCI), and Secure Computing and Network Center (SCONCE); Institute for Mathematical Behavioral Sciences; Institute for Transportation Studies and Network Systems Center.

Faculty and student-driven research in the Bren School is supported through a variety of grants, gifts, and contracts from public and private institutions such as the State of California, the U.S. Department of Education, various U.S. defense agencies, the National Science Foundation, the National Institutes of Health, NASA, and various companies, including Apple, Boeing, Cisco, Conexant, Google, HP, IBM, Intel, Microsoft, Raytheon, Sun, Toshiba, and Unisys. Since 2001, ICS has received nearly $100 million in extramural funding, in addition to the recent $20-million endowment.

Faculty and alumni of the Bren School of ICS have contributed some of computing's most significant advancements, including revolutionizing computer-aided drafting techniques; the creation of the current Hypertext Transfer Protocol (HTTP/1.1); development of the Internet standards for HTTP and Uniform Resource Identifiers (URI); the founding of the Apache HTTP Server Project that produces the software for over 60 percent of public Internet Web sites; and the creation of the Domain Name System (DNS) that translates Web and e-mail addresses into the numeric system used to route information along the Internet.

The Bren School is actively committed to increasing diversity in the computing and information technology fields. The Ada Byron Research Center was created in 2003 to address research and outreach topics aimed at increasing the participation of women and other underrepresented populations in computer science, engineering, digital media, and related information technology areas. Bren ICS is an active partner of the National Center for Women & Information Technology, whose overarching goal is parity in the professional information technology workforce.

FACILITIES AND COMPUTING RESOURCES

Donald Bren Hall, a six-story building completed in 2007, houses classrooms, research labs, meeting rooms and facilities, and faculty, graduate student, and administrative staff offices. The building's innovative use of space and technology is designed to promote faculty/student interactions and facilitate collaborative scholarly work.

The School offers a wide range of research and instructional computing equipment, including many advanced workstations, servers, and other specialized hardware and software. High-speed wireless networking is available in all Bren ICS buildings, classrooms, and labs.

DEGREES

Biomedical Computing	B.S.
Business Information Management[1]	B.S.
Computer Game Science	B.S.
Computer Science	B.S., M.S., Ph.D.
Computer Science and Engineering[2]	B.S.
Informatics	B.S.
Information and Computer Science	B.S., M.S., Ph.D.
Networked Systems[2]	M.S., Ph.D.
Statistics	M.S., Ph.D.

[1] Offered jointly with The Paul Merage School of Business. See the Interdisciplinary Studies section of the *Catalogue* for information.

[2] Offered jointly with The Henry Samueli School of Engineering. See the Interdisciplinary Studies section of the *Catalogue* for information.

UNDERGRADUATE PROGRAM

A Bren School of ICS undergraduate education is a blend of scholarship, science, technology, and practical application that forms an excellent foundation for professional life.

The basis of the undergraduate program is a set of fundamental courses in mathematics and computer science, supplemented by general education courses from other academic disciplines. A premium is placed on both communication and quantitative skills. Students start early with hands-on experience with advanced computing systems, and intense use of computer and network technologies continues throughout the undergraduate program. Students study data organization, algorithm design and analysis, design and organization of hardware and network systems, software engineering, artificial intelligence, social aspects of system design and use, and management of technology. In the process, students work with state-of-the-art hardware and software technologies, and learn several contemporary programming languages.

The Donald Bren School of Information and Computer Sciences offers seven majors: Biomedical Computing (BMC); Business Information Management (BIM), offered jointly with The Paul Merage School of Business; Computer Game Science (CGS); Computer Science (CompSci); Computer Science and Engineering (CSE), offered jointly with The Henry Samueli School of Engineering; Informatics (IN4MTX); and Information and Computer Science (ICS). There are also programs of study leading to minors in Biomedical Computing, Digital Information Systems, Informatics, Information and Computer Science, and Statistics.

B.S. in Biomedical Computing. Biomedical Computing (BMC) is the intersection of computer science and information technology with biology and medicine. Students will receive a firm quantitative grounding in mathematics, statistics, and computation; become familiar with the basic foundations of physics, chemistry, and biology; master a rigorous and demanding Biomedical Computing year-long sequence; study theory, algorithms, data mining, and machine learning; and carry out a year-long immersive capstone Senior Project. See page 353 in the Department of Computer Science section.

B.S. in Business Information Management. The undergraduate Business Information Management (BIM) major seeks to educate students to understand and apply the theories and concepts of a broad, integrated curriculum covering computing (computer science, informatics, and software); business fundamentals (accounting, finance, marketing, strategy, and operations); and analytical methods (mathematics, statistics, economics, management science, and decision analysis). The fundamentals of information and computer science provide the foundation for understanding and evaluating the technology through which most of the business information is gathered and presented, while the business fundamentals provide a background and context in which information and its analysis will be applied. The major is administered by the Donald Bren School of Information and Computer Sciences and is a collaborative, interdisciplinary degree program between the Bren School and The Paul Merage School of Business. See page 369 in the *Catalogue's* Interdisciplinary Studies section.

B.S. in Computer Game Science. The Computer Game Science (CGS) major combines a solid foundation in computer science with a focus on designing, building, and understanding computer games and other forms of interactive media. The fundamentals of information and computer science, along with course work in mathematics, statistics, physics, and film and media studies, provide students with the concepts and tools to study a wide scope of computer game technologies. The major emphasizes design, collaboration, and the understanding of computer games and related technologies and media in a social and cultural context. See page 344.

B.S. in Computer Science. The Computer Science (CS) major provides students with an education that focuses on the design and implementation of computer systems and the software that runs them as well as the application of these tools to solve complex problems. Additionally, students may take a variety of courses to broaden their knowledge and/or specialize in particular areas. For instance, the major is well-suited for a more in-depth study of topics such as artificial intelligence and machine learning, advanced data structures, computer graphics, cryptography and security, computational biology, embedded systems, networked systems, database systems, and computer games. See page 354 in the Department of Computer Science section.

B.S. in Computer Science and Engineering. This program is designed to provide students with the fundamentals of computer science, both hardware and software, and the application of engineering concepts, techniques, and methods to both computer systems engineering and software system design. The Computer Science and Engineering (CSE) major gives students access to multidisciplinary problems in engineering with a focus on total systems engineering. Students learn the computer science principles that are critical to development of software, hardware, and networking of computer systems. From that background, engineering concepts and methods are added to give students exposure to circuit design, network design, and digital signal processing. Elements of engineering practice include a systems view, manufacturing and economic issues, and multidisciplinary engineering applications. The program is administered jointly by the Department of Computer Science in the Bren School of ICS and the Department of Electrical Engineering and Computer Science in The Henry Samueli School of Engineering. See page 370 in the *Catalogue's* Interdisciplinary Studies section.

B.S. in Informatics. Within the overall discipline of information and computer science, the Informatics (IN4MTX) major is concerned with the relationship between what is inside the computer and what is outside. The Informatics major addresses the broad set of issues surrounding design, ranging from initial requirements gathering to estimating and measuring the impact of alternative solutions—all from a multidisciplinary perspective that includes computer science, information science, organizational science, social science, and cognitive science. Students pursuing the B.S. in Informatics complete a specialization in one of three areas: software engineering, human-computer interaction, and organizations and information technology. See page 361 in the Department of Informatics section.

B.S. in Information and Computer Science. The overall field of information and computer science spans a vast spectrum of topics. At the one end, it includes computer system design and networking, detailing how modern computer hardware and networks operate on a day-to-day basis. At the other end are human factors, such as how software should be structured to facilitate cooperative work among groups of people. The B.S. in Information and Computer Science (ICS) provides students with a broad introduction to these topics. Through the selection of elective courses, students may choose to specialize in one or more of seven areas: artificial intelligence, computer systems, implementation and analysis of algorithms, information systems, networks and distributed systems, optimization, or software systems. See page 345.

Major and Minor Restrictions

Students majoring in Business Information Management may not double major in Business Administration nor minor in Management, Informatics, or Information and Computer Science.

The major in Biomedical Computing may not be combined with the minor in Information and Computer Science.

The Computer Game Science major may not be combined with the concentration in Game Culture and Technology.

The major in Computer Science (CS) cannot be combined with the major in Computer Science and Engineering (CSE).

The major in Computer Science and Engineering (CSE) cannot be combined with the major in Computer Engineering (offered by The Henry Samueli School of Engineering).

The major or minor in Information and Computer Science (ICS) cannot be combined with the majors in Computer Game Science, Computer Science (CS), Computer Science and Engineering (CSE), or Informatics.

Bren School of ICS majors may not minor in Informatics.

Bren School of ICS majors may not minor in Digital Information Systems. Courses used to complete the minor in Digital Information Systems may not also count toward the requirements for the Information and Computer Science minor or the Informatics minor.

Students who have completed both ICS 21 and 22 with grades of C or better and who wish to change majors to Informatics may use ICS 21 and 22 in satisfaction of the requirements of Informatics 41 and 42, and similarly with ICS 52 and Informatics 43.

Students who have completed both Informatics 41 and 42 with grades of C or better and who wish to change majors to Computer Game Science, Computer Science, or Information and Computer Science may use Informatics 41 and 42 in satisfaction of the requirement of ICS 21 and 22, and similarly with Informatics 43 and ICS 52.

Students enrolled in other degree programs who are interested in the field of computer science may pursue the introductory course sequences (ICS 21 and 22 or Informatics 41 and 42) followed by other courses (such as ICS 23 or Informatics 43) as far as their interests require and their programs permit. The introductory courses, along with most of the lower-division ICS courses for nonmajors, may be used to fulfill a General Education requirement. Nonmajors may also take other Bren ICS courses for which they have met the prerequisites.

The ICS Student Affairs Office is staffed by professional academic counselors and peer advisors. These individuals are available to assist students with program planning, questions on University and School policies and procedures, progress toward graduation, and other issues that arise in the course of a student's education. **Faculty also are available for advising, generally for suggestions of additional course work in the student's academic, research, and career interest areas and on preparation for graduate school.**

Honors

Honors at graduation, e.g., *cum laude, magna cum laude, summa cum laude*, are awarded to approximately the top 12 percent of the graduating seniors. A general criterion is that a student must have completed at least 72 units in residence at the University of California. The student's cumulative record at the end of the final quarter is the basis for consideration of awarding Latin Honors. Other important factors are considered (see page 52).

CAREERS

Graduates of the Donald Bren School of Information and Computer Sciences pursue a variety of careers. Many graduates specify, design, and develop a variety of computer-based systems comprised of software and hardware in virtually every application domain, such as aerospace, automotive, biomedical, consumer products, engineering, entertainment, environmental, finance, investment, law, management, manufacturing, and pharmacology. Graduates also find jobs as members of research and development teams, developing advanced technologies, designing software and hardware systems, and specifying, designing, and maintaining computing infrastructures for a variety of institutions. Some work for established or start-up companies while others work as independent consultants. After a few years in industry, many move into management or advanced technical positions. Many students also use the undergraduate major as preparation for graduate study in computer science or another field (e.g., medicine, law, engineering, management).

ADMISSIONS

To ensure admission consideration for the fall quarter, students should be sure to file their application by November 30 of the prior year. The selection criteria include grades, test scores, and other considerations.

Transfer Student Policy

Transfer requirements vary by major.

Biomedical Computing: See page 353.
Business Information Management: See page 369.
Computer Game Science: See page 344.
Computer Science: See page 355.
Computer Science and Engineering: See page 370.
Informatics: See page 362.
Information and Computer Science: See page 346.

NOTE TO TRANSFER APPLICANTS: These majors require a series of lower-division courses, and prerequisites constrain the order in which they can be taken. Junior-level transfer students who must complete a significant part of this sequence may find that it will take longer than two years at UCI to complete their degree. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Change of Major

Students interested in changing their major to one offered by the School should contact the ICS Student Affairs Office for more information and assistance. Information is also available at http://www.changeofmajor.uci.edu.

Major and minor restrictions: See pages 342–343.

SPECIAL PROGRAMS AND COURSES

The Bren School of ICS Honors Program

The Bren School of ICS Honors Program provides selected upper-division students an opportunity to carry out a research project under the direction of a faculty member in the School. Eligible students participate in the ICS Honors Seminar (ICS H197), which provides an introduction to the range of current faculty research. Each student then affiliates with an ICS faculty advisor who agrees to supervise a minimum of two quarters of research. The participating student prepares a final written research report and submits a copy for review to both the faculty advisor and the Honors Program advisor. Successful completion of the Honors Program earns the student a certificate and medal from the School. Further, a notation of successful completion is added to the student's transcript. For more information about course requirements, application procedures, and deadlines visit http://www.ics.uci.edu/ugrad/honors/index.php, or contact the Student Affairs Office at (949) 824-5156.

Other Opportunities

Bren School of ICS undergraduates may complement their educational experience by participating in other programs. Information about the following programs is available elsewhere in the *Catalogue* and via the program Web sites: Campuswide Honors Program, Undergraduate Research Opportunities Program, Education Abroad Program, and Student Achievement Guided by Experience (SAGE Scholars).

Concentration: Engineering and Computer Science in the Global Context

The globalization of the marketplace for information technology services and products makes it likely that Bren ICS graduates will work in multicultural settings or be employed by companies with extensive international operations, or customer bases. The goal of the concentration is to help students develop and integrate knowledge of the history, language, and culture of a country or geographic region outside the United States, through course work both at UCI and an international host campus, followed by a technology-related internship in the host country.

All Bren School majors in good standing may propose an academic plan that demonstrates the ability to complete the concentration (a minimum of eight courses) and other requirements for graduation in a reasonable time frame. It is expected that a student's proposal will reflect a high degree of planning that includes the guidance of academic counselors and those at the UCI Center for International Education regarding course selection, as well as considerations related to internship opportunities, housing, and financial aid. Each student's proposed program of study must be approved by the Bren School of ICS Associate Dean for Student Affairs. The Associate Dean will be available to assist qualified students with the development of a satisfactory academic plan, as needed.

The concentration consists of the following components:

A. A minimum of eight courses at UCI or at the international campus with an emphasis on the culture, language (if applicable and necessary), history, literature of the country that corresponds to the international portion of the program, international law, international labor policy, global issues, global institutions, global conflict and negotiation, and global economics;

B. A one- or two-semester sequence of technical courses related to the major and, possibly, culture, history, and literature courses taken at an international university;

C. A two-month or longer technical internship experience in the same country as the international educational experience.

More information about the requirements for the concentration is available in the Bren ICS Student Affairs Office.

Concentration: Game Culture and Technology

The concentration in Game Culture and Technology is available to currently enrolled students majoring in Computer Science, Informatics, Information and Computer Science, and Studio Art. It exposes advanced students to an influential and expanding sector of media culture and contemporary art and technology practice, facilitates students' media literacy in relation to an increasingly prevalent art and entertainment form, and enables students to be more critical consumers and producers of new media art and culture.

Selection Process. Students may apply for admission no earlier than the end of their freshman year, and no later than the end of their junior year. Students will be selected by a competitive review process which occurs at the end of spring quarter. Each applicant must submit the following materials to the Program Director, c/o their School's Student Affairs Office: (1) a written statement of purpose; (2) portfolio or project samples that demonstrate an interest in the area; and (3) transcripts of UCI and other college course work. Applicants will be notified of the selection process outcome by the beginning of the fall quarter. A maximum of 12 students will be admitted per year in an effort to ensure access to Game Culture and Technology Laboratory research and development facilities in the Claire Trevor School of the Arts, Calit2, and the Institute for Software Research (ISR), all of which may be used to support student projects.

Requirements. Students must complete a total of eight courses (32 units) from within the two schools, which may also be used to satisfy existing requirements.

A. Three courses (12 units): Studio Art 106B (Game Studies), 130B (Topics in Game Design), and Computer Science 113/Informatics 125 (Computer Game Development).

B. Three courses (12 units) chosen from Studio Art 106A (Programming for Artists), 130A (Projects in New Technologies), 130C (World Building), Informatics 43 (Informatics Core Course III) or ICS 52 (Introduction to Software Engineering), Informatics 121 (Software Design I), 131 (Human-Computer Interaction), 132 (Project in Human-Computer Interaction and User Interfaces), Computer Science 112 (Computer Graphics), 171 (Introduction to Artificial Intelligence), 175 (Project in Artificial Intelligence).

C. Two courses (8 units) chosen from Studio Art 197 (Internship), 199 (Independent Study), Computer Science H198 (Honors Research), 199 (Individual Study), Informatics H198 (Honors Research), and 199 (Individual Study).

Undergraduate Major in Business Information Management (BIM)

This program is administered jointly by the Bren School of ICS and The Paul Merage School of Business. For information, see the Interdisciplinary Studies section of the *Catalogue*, page 369.

REQUIREMENTS FOR THE B.S. DEGREE IN BUSINESS INFORMATION MANAGEMENT

University Requirements: See pages 55–62.

Major Requirements: See page 369 in the Interdisciplinary Studies section of the *Catalogue*.

Undergraduate Major in Computer Game Science

The Computer Game Science major gives students a strong foundation in introductory information and computer science, an extensive education in technologies and design practices associated with computer games, and an opportunity to focus in two areas of particular interest to the student. Students who complete the major will be able to create interactive and human-centered game designs; implement games using skills in modeling, graphics, software engineering, hardware architectures, human interfaces, and aesthetics; and evaluate games and game technology for their use in education, art, and social change.

Career Paths. A wide variety of careers and graduate programs are open to Computer Game Science (CGS) graduates. The video game industry is comparable in size to the film and music industries, and job growth projections are strong for people with strong technical backgrounds. Many other fields, including mobile software development, interactive entertainment, and training and education software have demand for similar skill sets and knowledge. CGS graduates are well-trained in computer science, and can thus pursue graduate programs or any career that involves designing, implementing, evaluating, or interacting with computer-based systems.

ADMISSIONS

Freshman Applicants: See pages 33–37.

Transfer Applicants:

Junior-level applicants who satisfactorily complete course requirements will be given preference for admission. Applicants must satisfy the following requirements:

1. Completion of one year of college-level mathematics (calculus or discrete math).
2. Completion of one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language.

*NOTE: Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree.

REQUIREMENTS FOR THE B.S. DEGREE IN COMPUTER GAME SCIENCE

University Requirements: See pages 55–62.

Major Requirements

Lower-division:

A. ICS 21, ICS 22, ICS 23, ICS 51, ICS 52, ICS 65.

B. Mathematics 2A, Mathematics 2B, Mathematics 6G, ICS 6B/Mathematics 6B, ICS 6D/Mathematics 6D, Statistics 67/Mathematics 67.

C. ICS 60, ICS 61, ICS 62.

D. Physics 3A.

E. Film and Media Studies 85A-B-C.

Upper-division:

A. *Computer Game Science Core requirements:* ICS 160, ICS 161, ICS 162, ICS 163, ICS 167, ICS 168, ICS 169A-B.

B. Seven elective courses: three courses from one Bren ICS track, two courses from a second Bren ICS track, plus two courses from any Bren ICS track or non-Bren ICS track listed below.

Bren ICS Tracks:

Algorithms: CS 161; CS 165; one of CS 162, CS 163, CS 164.

Artificial Intelligence: CS 171; CS 175; one of CS 174, CS 177, CS 178, CS 179.

Computational Biology: CS 183; CS 184A; CS 184B; CS 184C.

Computer Graphics and Vision: CS 112; one of CS 111, CS 116; one of CS 114, CS 117.

Computer Networks: CS 132; two of CS 131, CS 133, CS 134.

Databases: CS 122A; CS 122B; one of CS 121/Informatics 141, CS 125.

Hardware: CS 151; CS 154; one of CS 145A, CS 152, CS 153.

Human-Computer Interaction: Informatics 131; Informatics 133; one of Informatics 132, Informatics 134.

Operating Systems: CS 143A; CS 143B; one of CS 144, CS 146.

Programming Languages and Compilers: Informatics 101/ CS 141; CS 142A; one of Informatics 102, CS 142B.

Project Management: Informatics 111; Informatics 161; one of Informatics 151, Informatics 162.

Simulation and Optimization: CS 169; CS 168; CS 115.

Social Impacts of Computing: Informatics 161; Informatics 162; Informatics 163.

Software Design: Informatics 121; Informatics 122; Informatics 123.

Software Engineering: Informatics 111; Informatics 113; Informatics 115.

Non-Bren ICS Tracks (*some of these courses have prerequisites that are not part of the CGS major*):

Business Management: Management 101, 102, 105, 107, 109, 121, 153, 154.

Cognitive Science: Psychology 130A, 131A, 131B, 135M, 135A, B, C, 140C.

Mathematics: Mathematics 112A-B-C, 115, 121A-B.

Film and Media Studies: Film and Media Studies 113, 143, 185.

With the approval of the ICS Associate Dean for Student Affairs, a student may design a new track, or an Independent Study, Honors Research, or Special Topics course may be substituted for a course in a track. Computer Game Science (CGS) elective courses may not be counted as part of the Management minor or the Biomedical Computing minor.

Major and minor restrictions: See pages 342–343.

Sample Program of Study — Computer Game Science

FALL	WINTER	SPRING
Freshman		
ICS 21	ICS 22	ICS 23
Math 2A	Math 2B	ICS 6B/Math 6B
ICS 60	ICS 61	ICS 62
	Gen. Ed. (I)	Gen. Ed. (I)
Sophomore		
ICS 51	ICS 65	ICS 52
ICS 6D	ICS 160	ICS 161
Physics 3A	Math 6G	Stats 67/Math 67
Film and Media 85A	Film and Media 85B	Film and Media 85C
Junior		
ICS 162	ICS 167	ICS 168
CGS Elective	CGS Elective	CGS Elective
CGS Elective	UD Writing	CGS Elective
Gen. Ed. (III/VIII)		Gen. Ed. (III)
Senior		
ICS 163	ICS 169A	ICS 169B
CGS Elective	CGS Elective	Elective
Gen. Ed. (III/VII)	Elective	Gen. Ed. (VI)

Undergraduate Major in Information and Computer Science

The Information and Computer Science (ICS) major provides students with a broad introduction to topics ranging from computer system design and networking to software design and computer-supported cooperative work. Through the completion of four elective courses, students may choose to specialize in one or more of six areas (see below under Major Requirements). ICS majors may also choose to complete the Game Culture and Technology concentration, an interdisciplinary course of study requiring a total of eight courses (32 units) from the Bren School of ICS and the Claire Trevor School of the Arts (Department of Studio Art); selection criteria and course requirements are described on page 344.

ADMISSIONS

Freshman Applicants: See pages 33–37.

Transfer Applicants:

Junior-level applicants who satisfactorily complete the following course requirements will be given preference for admission. Applicants must satisfy the following requirements:

1. One year of discrete mathematics, if available; if not, first-year calculus.
2. Completion of one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language.

*NOTE: Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree.

REQUIREMENTS FOR THE B.S. DEGREE IN INFORMATION AND COMPUTER SCIENCE

University Requirements: See pages 55–62.

Major Requirements

Lower-division (some or all of these are prerequisites for required upper-division ICS courses):

A. Mathematics 2A-B, ICS 6B/Mathematics 6B, ICS 6D/Mathematics 6D, Mathematics 6G or 3A, Statistics 67/Mathematics 67.

B. ICS 21, 22, 23, 51, 52.

Upper-division:

A. *ICS Core requirements:* CSE121/Informatics 111, Informatics 161, CS 141/CSE141/Informatics 101, CS 142A/CSE142, CS 143A/CSE104, CS 151, CS 152, CS 161/CSE161, CS 171.

B. Two intermediate courses, each from a different group: CS 115; CS 116; Informatics 102; Informatics 113 or 115; Informatics 122 or 123; Informatics 131, 133, or 143; Informatics 162 or 171; CS 131, 144, 146, or Engineering EECS113; CS 132, CS 145A, or Engineering EECS115/CSE151; CS 134, 162, 163, 164, 167, or 168; CS 174, 177, 178, 179, Engineering EECS101; CS 111, 112, or Engineering EECS104; CS 122A/Engineering EECS116.

C. Three project courses selected from Informatics 117, Informatics 119, Informatics 121, Informatics 122, Informatics 132, Informatics 134, Informatics 148, Informatics 163, CS 113/Informatics 125, CS 114, CS 117, CS 122B, CS 133, CS 142B, CS 143B, CS 153, CS 154, CS 165, CS 175.

D. Two additional courses chosen from this list that have not been used to satisfy another ICS major requirement: Mathematics 105A-B, 114A, 118A-B, 120A-B, 121A-B, 130B-C, 132B-C, 140A-B, 141, 150, 151, 152, 161, 162A-B, 171A-B, 173A-B, 174A, 180A; CS 162, 163, 164, 167, 168, 169, 177, 179; Statistics 120B-C, 121, or Mathematics 131B-C; Philosophy 105A-B-C.

Specializations: Students may elect to complete one or more specializations within the major in Information and Computer Science. Courses taken for a specialization must be taken for a letter grade and may be used to satisfy upper-division requirements for the major. Courses may also be used to satisfy requirements of more than one specialization, subject to the following limitation: separate specializations may share at most one course.

One individual study course (CS H198 or CS 199) in the area of specialization may be substituted for one designated course (indicated by *) in the specialization requirements, upon prior approval of the Bren School Associate Dean for Student Affairs.

Artificial Intelligence: four courses* selected from CS 116; CS 163 or 165; CS 172–179.

Computer Systems: four courses selected from Informatics 123, CS 112, CS 115, CS 131–134, CS 142B, CS 143B, CS 144, CS 145A, CS 146, CS 153–154.

Implementation and Analysis of Algorithms: two courses selected from CS 163, CS 164, CS 165; two courses* selected from Informatics 117, CS 133, CS 142B, CS 143B, CS 175, CS 177, CS 178.

Information Systems: three courses selected from Informatics 113, Informatics 117, Informatics 132, Informatics 162, Informatics 163, Informatics 171; one course* selected from Informatics 123, Informatics 131, Informatics 153, CS 122A, CS 132, CS 176.

Networks and Distributed Systems: four courses selected from Informatics 123, CS 131, CS 132, CS 133*, CS 134, CS 143B*.

Optimization: four courses selected from CS 144, CS 163, CS 168, CS 169, Statistics 121, Mathematics 105A, 105B, 171A, 171B.

Software Systems: two courses selected from Informatics 113, Informatics 115, Informatics 122, Informatics 123, Informatics 131, Informatics 132, Informatics 133; two software project courses chosen from Informatics 117, Informatics 119*, Informatics 134, or Informatics 148.

Major and minor restrictions: See pages 342–343.

Sample Program of Study — Information and Computer Science

FALL	WINTER	SPRING
Freshman		
ICS 21	ICS 22	ICS 23
Math 2A	Math 2B	ICS 6B/Math 6B
UC Entry Level Writing	Gen. Ed. (I)	Gen. Ed. (I)
Sophomore		
ICS 51	ICS 52	ICS UD Core
ICS 6D/Math 6D	Math 6G or 3A	ICS UD Core
Gen. Ed. (II/IV)	Gen. Ed. (II/IV)	Stats/Math 67
Gen. Ed. (III/VII/VIII)	Gen. Ed. (III/VII/VIII)	Gen. Ed. (II/IV)
Junior		
ICS UD Core	ICS UD Core	ICS UD Core
ICS UD Core	ICS UD Core	ICS UD Core
UD Math	UD Math	UD Writing
Gen. Ed. (III/VII/VIII)	Gen. Ed. (III/VII/VIII)	Gen. Ed. (VI)
Senior		
ICS Project	ICS Project	ICS Project
ICS Intermediate	ICS Intermediate	ICS UD Core
Gen. Ed. (II/IV)	Gen. Ed. (II/IV)	Gen. Ed. (II/IV)
Gen. Ed. (III/VII/VIII)	Gen. Ed. (IX)	

NOTE: ICS upper-division core, intermediate, and project requirements may be satisfied by specific Computer Science, Informatics, Engineering, Mathematics, Statistics, and Philosophy courses. See the requirements listed above.

Minor in Information and Computer Science

Students outside the School may also pursue a minor in Information and Computer Science. The minor provides a focused study of Information and Computer Science to supplement a student's major program of study and prepares students for a profession, career, or academic pursuit in which computer science is an integral part but is not the primary focus. The ICS minor contributes to students' competence in computing technology and proficiency in programming as well as exposing them to the fundamentals of computer science. The minor allows students sufficient flexibility to pursue courses that complement their major field or address specific interests.

Requirements for the Minor: ICS 21, 22, 23; ICS 6D or Mathematics 6D; ICS 51 or 52; two upper-division courses from CS 111–144, CS 151–177, Informatics 101–102, Informatics 111–119, Informatics 123, Informatics 125, Informatics 131, Informatics 132–134, Informatics 141, Informatics 148, Informatics 153, Informatics 161–163, and Informatics 171. CS 190–199 and Informatics 190–199 may not be applied to the minor.

GRADUATE PROGRAMS IN INFORMATION AND COMPUTER SCIENCE

The Bren School of ICS offers M.S. and Ph.D. degrees in Computer Science, Information and Computer Science, Networked Systems, and Statistics.

ICS Ph.D. students must complete a concentration in Informatics (INF).

ICS M.S. students must complete one of the following concentrations: Embedded Systems or Informatics (INF).

See page 355 for additional information about the graduate program in Computer Science. See page 366 for additional information about the graduate program in Statistics. The degree program in Networked Systems is supervised by an interdepartmental faculty group from the Department of Computer Science in the Bren School and the Department of Electrical Engineering and Computer Science in The Henry Samueli School of Engineering. Information is available on page 375 in the Interdisciplinary Studies section of the *Catalogue*.

ADMISSION

Applicants will be evaluated on the basis of their prior academic record. Applicants for the M.S. degree are expected to have a bachelor's degree in computer science or a related field. Those who do not have an undergraduate degree in computer science may take the Computer Science Subject GRE test to demonstrate sufficient background in the field. Scores are reviewed on a case-by-case basis. Ph.D. applicants will additionally be evaluated in their potential for creative research and teaching in Information and Computer Science.

Applicants are expected to have (1) skills in computer programming at least equivalent to those obtained in college-level courses in programming and language development; (2) skills in mathematics equivalent to those obtained in complete college-level courses in logic and set theory, analysis, linear algebra and modern algebra, or probability and statistics; (3) data structures, analysis of algorithms, automata theory, or formal languages; and (4) computer architectures.

All applicants are evaluated on the materials submitted: letters of recommendation, official GRE test scores, official college transcripts, and personal statement. For more information, contact the ICS graduate counselor at (949) 824-5156 or send e-mail to gcounsel@ics.uci.edu.

Financial Assistance

Financial assistance is available to Ph.D. students in the form of fellowships, teaching assistantships, and research assistantships. Although assistance varies, it is the School's goal to support all entering Ph.D. students, subject to availability of funds. International students who are not citizens of countries where English is either the primary or dominant language, as approved by Graduate Council, and who apply for teaching assistantships must take one of the approved English proficiency examinations. More information is available in the Graduate Division section of the *Catalogue*.

Students with a Previously Earned Master's Degree

Credit for one or all required courses may be given at the time of admission to those students who have completed a master's degree in computer science or a closely related field. Course equivalency will be determined by the Bren School Associate Dean for Student Affairs following a written recommendation from a sponsoring research advisor. Research advisors can require that a student take additional courses when this is appropriate.

An additional M.S. degree will not be awarded if the student currently holds an M.S. degree in computer science or a related field from another university.

Course Substitutions

A student who has taken relevant graduate courses at UCI or another university may petition to have a specific course certified as equivalent to one which satisfies Bren School of ICS requirements. The petition should describe the course and should be approved by either the student's advisor or the instructor teaching the class, and by the Associate Dean for Student Affairs. Only two courses can be substituted.

Master of Science Program

The Bren School offers M.S. degrees in Computer Science, Information and Computer Science, Networked Systems, and Statistics.

Students pursuing the M.S. in Information and Computer Science must complete a concentration in Embedded Systems or Informatics (INF).

See page 355 for additional information about the graduate program in Computer Science. See page 366 for additional information about the graduate program in Statistics. See page 375 in the Interdisciplinary Studies section for additional information about the Networked Systems program.

M.S. students may select one of two options, the thesis plan or the comprehensive examination plan, as described below. The normative time for completion of the M.S. degree is two years. All study must be completed within four calendar years from the date of admission.

Plan I: Thesis Plan. The thesis option is available for graduate students who may wish to continue on to a Ph.D. program or those who wish to concentrate on a specific problem. To qualify for this option, students must be in good academic standing with their Department. The student must enroll in at least two quarters of Thesis Supervision (CS 298 or Informatics 298) that will substitute for two required courses as specified under the concentration area or specialization of choice. All required courses must be completed with a grade of B or better, and the student must write a research or thesis project. A committee of three faculty members (voting members of the Academic Senate) will guide the student and give final approval of the thesis. The committee will consist of an advisor (faculty member from the student's department) who is willing to supervise the thesis project, and two other faculty members (one of which must be from the student's department) who are willing

to serve on the committee as readers of the thesis. An oral presentation of the thesis to the committee will be required. Seminar courses that have an "S" suffix (e.g., 209S) do not count toward degree requirements.

Plan II: Comprehensive Examination Plan. The student completes the required units as specified under the concentration area. Each course must be completed with a grade of B or better. Seminar courses that have an "S" suffix (e.g., 209S) do not count toward degree requirements. The student must take a comprehensive examination given by ICS faculty. The examination covers the core requirements and is given twice a year (fall and spring quarters).

ICS CONCENTRATION IN EMBEDDED SYSTEMS—M.S.

The goal of this program is to prepare students for challenges in developing future embedded systems. These future systems will further integrate communications, multimedia, and advanced processors with complex embedded and real-time software for automotive, medical, telecommunications, and many other application domains. Furthermore, embedded systems are becoming parallel, deploying multiprocessor systems-on-a-chip and parallel application software. An in-depth knowledge of the underlying scientific and engineering principles is required to understand these advances and to contribute productively to development of such systems. This program helps students master embedded system fundamentals, advanced computer architecture and compilers, networking, security, embedded, parallel and distributed software, and computer graphics in a sequence of courses and labs. Students also complete a large embedded systems project and may choose to write a Master's thesis.

Required Courses

The following courses must be completed with a grade of B or better: all students must complete six courses from the following List A: Introduction to Embedded and Ubiquitous Systems (CS 244), Design Automation and Prototyping of Embedded Systems (CS 247), Computer Systems Architecture (CS 250A), Internet (CS 232), Network and Distributed Systems Security (CS 203), Parallel Computing (CS 242), Modern Microprocessors (CS 250B), Distributed Computer Systems (CS 230), High-Performance Architectures and Their Compilers (CS 243).

Six additional courses chosen in one of the following two ways: (1) for students pursuing the M.S. thesis option, two four-unit courses in Thesis Supervision (CS 298) plus four graduate courses taken from List A or the following List B; or (2) for all other students, six graduate courses taken from List A or the following List B: Advanced Compiler Construction (CS 241), Software for Embedded Systems (CS 245), Validation and Testing of Embedded Systems (CS 246), Introduction to Computer Design (CS 252), Advanced System Software (Engineering EECS 211), Visual Computing (CS 211A), Introduction to Ubiquitous Computing (CS 248A/Informatics 241), Software Engineering (Informatics 211), Advanced User Interface Architecture (Informatics 235), Wireless and Mobile Networking (CS 236), Digital System Verification and Testing (CS 251), Design Description and Modeling (CS 253), Design Synthesis (CS 254), System Tools (CS 255), Combinational Algorithm for Design Synthesis (CS 258), Data Compression (CS 267), Graph Algorithms (CS 265), Real-Time Computer Systems (Engineering EECS 223). M.S. students who do not have an undergraduate degree in Computer Science or equivalent must also take CS 260.

Comprehensive Examination or Thesis

Each student must either (1) pass a comprehensive examination administered by the Embedded Systems faculty; or (2) submit a thesis for approval by a three-person committee consisting of an advisor (who is an ICS Embedded Systems full-time faculty member) and two other full-time faculty members (one of which must be from ICS).

ICS CONCENTRATION IN INFORMATICS—M.S.

See course requirements under Doctor of Philosophy program below, on this page.

Doctor of Philosophy Program

The Bren School offers Ph.D. degrees in Computer Science, Information and Computer Science, Networked Systems, and Statistics.

Students pursuing the Ph.D. in Information and Computer Science must complete a concentration in Informatics (INF).

See page 355 for additional information about the graduate program in Computer Science. See page 366 for additional information about the graduate program in Statistics. See page 375 in the Interdisciplinary Studies section for additional information about the Networked Systems program.

The Ph.D. program is research oriented and encourages students to work together with faculty to solve advanced problems in information and computer science. The program is designed for full-time study, and the normative time for completion of the Ph.D. is five years (four years for students who entered with a master's degree). The maximum time permitted is seven years. Students enrolled in the Ph.D. program must maintain satisfactory academic progress.

Teaching Requirements for the Ph.D. Program

All ICS doctoral students are required to participate in a minimum of two quarters of teaching activities before graduating. College-level teaching activities in UCI Summer Sessions or UCI Extension, or service at other U.S. universities may be accepted in fulfillment of this requirement.

Timeline for the Ph.D. Program

All course requirements must be satisfied prior to the student's application for advancement to candidacy. The normative time for advancement to candidacy is four years (three years for students who entered with a master's degree). Information on the selection of committees, advancement to candidacy, development of a doctoral dissertation, and final examination on the dissertation is available from the ICS Student Affairs Office.

ICS CONCENTRATION IN INFORMATICS (INF)—M.S. AND PH.D.

Informatics is the interdisciplinary study of the design, application, use, and impact of information technology. It goes beyond technical design to focus on the relationship between information system design and use in real-world settings. These investigations lead to new forms of system architecture, new approaches to system design and development, new means of information system implementation and deployment, and new models of interaction between technology and social, cultural, and organizational settings.

In the Donald Bren School of Information and Computer Sciences, Informatics is concerned with software architecture, software development, design and analysis, programming languages, ubiquitous computing, information retrieval and management, human-computer interaction, computer-supported cooperative work, and other topics that lie at the relationship between information

technology design and use in social and organizational settings. Effective design requires an ability to analyze things from many different perspectives, including computer science, information science, organizational science, social science, and cognitive science. Relevant courses in those disciplines are therefore an integral part of the program and give this concentration a unique interdisciplinary flavor—which is imperative as the computing and information technology fields play such a pervasive role in our daily lives.

Students must complete the Survey courses, Informatics Core courses, Informatics Breadth courses, and a focus track in General Informatics, Software, Interactive and Collaborative Technology, or Ubiquitous Computing. All courses must be passed with a grade of B or better.

Survey of Research and Research Methods: Research Methods in Informatics (Informatics 201) and two quarters of Seminar in Informatics (Informatics 209S).

Informatics Core Courses: three courses chosen from Software Engineering (Informatics 211), Human-Computer Interaction (Informatics 231 or Informatics 232), Introduction to Ubiquitous Computing (Informatics 241), Social Analysis of Computing (Informatics 261).

Informatics Breadth: two four-unit graduate courses in ICS, CS, or Statistics, outside of Informatics.

Students must choose a track and complete the required courses:

General Informatics Track (GEN)
Electives: six four-unit graduate courses approved by the student's advisor and the Department Chair, excluding 290s, 298s, and 299s.

Software Track (SW)
Software electives: three courses from Formal Specification and Modeling (Informatics 213), Software Analysis and Testing (Informatics 215), Software Processes (Informatics 217), Software Environments (Informatics 219), Software Architecture (Informatics 221), Applied Software Design (Informatics 223), Knowledge-Based User Interfaces (Informatics 233), Advanced User Interface Architecture (Informatics 235), Special Topics (Informatics 295 by Software faculty; no more than two 295s are permitted).

Software Breadth: three graduate courses outside of Software, drawn from a list maintained by the Software faculty.

Interactive and Collaborative Technology Track (ICT)
ICT electives (group 1): two courses chosen from Computerization, Work, and Organizations (Informatics 263), Theories of Computerization and Information Systems (Informatics 265), Qualitative Research Methods in Information Systems (Informatics 203), Quantitative Research Methods in Information Systems (Informatics 205 or Social Science 201A and 201B).

ICT electives (group 2): two courses chosen from Knowledge-Based User Interfaces (Informatics 233), Advanced User Interface Architectures (Informatics 235), Computer-Supported Cooperative Work (Informatics 251).

ICT Breadth: two four-unit graduate courses approved by the student's advisor, excluding 290s, 298s, and 299s. Students are encouraged, but not required, to take them outside of Informatics.

Ubiquitous Computing Track (UBICOMP)
Additional required courses: Ubiquitous Computing and Interaction (Informatics 242) and Introduction to Embedded and Ubiquitous Systems (Informatics 244).

UBICOMP Breadth: four four-unit graduate courses approved by the student's advisor excluding 290s, 298s, and 299s. Students are encouraged, but not required, to take them outside of Informatics.

Research Project for the Ph.D.

Each student must find an Informatics faculty advisor and successfully complete a research project with that faculty member by the end of the second year. The research project should be done over at least two quarters of independent study or thesis supervision (Informatics 299 or 298) with that faculty.

Written Assessment for the Ph.D.

Each student must pass a written assessment. Students in the SW and ICT tracks must pass a written examination (also known as phase II exam) regularly administered by the Department. This examination is based on predetermined reading lists maintained by the SW and ICT faculty, respectively. Students in the UBICOMP and GEN tracks must describe the research project in a publication-quality report, which must be approved by three UBICOMP and Informatics faculty, respectively.

Candidacy Examination for the Ph.D.

Each student must pass the oral advancement to candidacy examination, which assesses the student's ability to conduct, present, and orally defend research work at the doctoral level. The candidacy committee will consist of five faculty members, the majority of whom must be members of the student's program, and the examination is conducted in accordance with UCI Senate regulations. The student must complete the course requirements, complete the research project, and pass the written assessment prior to advancing to candidacy. The oral candidacy examination consists of a research presentation by the student, followed by questions from the candidacy committee.

Students in the UBICOMP and GEN tracks, additionally to questions about the presented research, will also be asked questions about a predetermined list of readings. In the case of UBICOMP, that list is maintained by the UBICOMP faculty; in the case of GEN, that list is to be determined by the student's committee.

Doctoral Dissertation Topic Defense

The student must present a substantial written document representing the student's dissertation plan. This document must include the proposed dissertation abstract, a dissertation outline, a comprehensive survey of related work, and a detailed plan for completing the work. The dissertation plan is presented by the student to the dissertation committee, which must unanimously approve the student's proposal. The dissertation defense committee is formed in accordance with UCI Senate regulations.

Doctoral Dissertation and Final Examination

The student is required to complete a doctoral dissertation in accordance with Academic Senate regulations. In addition, the student must pass an oral thesis defense which consists of a public presentation of the student's research followed by an oral examination by the student's doctoral committee. The thesis must be approved unanimously by the committee.

Courses in Information and Computer Science

***(Schedule of Classes* designation: I&C Sci)**

COURSES FOR NONMAJORS

3 Internet Technologies and their Social Impact (4). Examines current Internet technologies and social implications at the individual, group, and societal level. Blogs, wikis, sharing of video, photos, and music, e-commerce, social networking, gaming, and virtual environments. Issues include privacy, trust, identity, reputation, governance, copyright, and malicious behavior. **(III)**

4 Design and Usability for the Web (4). Principles of human-computer interaction in evaluating, designing, and developing information presented on the World Wide Web. User characteristics, usability analysis, navigation and organization. Color, typography, multimedia, information visualization, prototyping, user studies, evaluation strategies. Web accessibility. May not be taken for credit after Informatics 131.

5 Environmental Issues in Information Technology (4). Explores the relationship between recent developments in information technology and current global environmental issues. Potential topics include ecoinformatics, e-waste, technological life cycle assessment, and online community building. Activities involve reading, writing, discussion, and a final project. **(II)**

6 Introducing Modern Computational Tools (4). A unified look at a spectrum of modern tools for building, solving, and analyzing simple computational models (deterministic and random) in diverse subject areas. Tools include those for numeric/symbolic computation, and those for acquiring, organizing, translating, processing, and displaying information. **(V, IX)**

8 Practical Computer Security (4). Principles of practical computer security to enable students to defend themselves against malicious threats. Firewalls, anti-virus, secure setup of a wireless access point. Cryptography basics and its application. Embedded devices and related security issues. **(II)**

10 How Computers Work (4). Introduction to digital computer and communication systems. Capabilities and limitations of information technology. Representing information in digital form. Overview of computer organization, Internet, operating systems, software. Human-computer interaction and social impact. May not be taken for credit after ICS 51, ICS 52, ICS 105, or Informatics 43. **(II)**

11 The Internet and Public Policy (4). How the Internet works. Current public policy issues concerning the Internet. Introductory economics. Communications law. Interactions between information technology, economics, and law. Case studies about Internet and communications policy. Same as Economics 11. **(II or III)**

Nonmajors may also take lower-division ICS courses for majors (below) to fulfill General Education requirements, if they have met the prerequisites.

LOWER-DIVISION COURSES FOR MAJORS

6B Boolean Algebra and Logic (4). Relations and their properties; Boolean algebras, formal languages; finite automata. Prerequisite: high school mathematics through trigonometry. Same as Mathematics 6B. **(V)**

6D Discrete Mathematics for Computer Science (4). Covers essential tools from discrete mathematics used in computer science with an emphasis on the process of abstracting computational problems and analyzing them mathematically. Topics include: mathematical induction, combinatorics, and recurrence relations. Prerequisite: high school mathematics through trigonometry. Same as Mathematics 6D. Formerly ICS 6A. **(V)**

20B Introduction to Computer Science with Applications to Biology (4). No background in computer science, programming, or biology required. Fundamental programming concepts are introduced using the language Python with a problem-oriented approach. All problems come from elementary molecular biology. May not be taken for credit after ICS 21/CSE21, ICS H21, or Informatics 41.

21 Introduction to Computer Science I (6). Introduces fundamental concepts related to computer software design and construction. Develops initial design and programming skills using a high-level language. Fundamental concepts of control structures, data structures, and object-oriented programming. Same as CSE21. Only one course from ICS 21/CSE21 and ICS H21 may be taken for credit. May not be taken for credit after Informatics 42. **(II or V; IX)**

H21 Honors Introduction to Computer Science I (6). Introduces fundamental concepts of computer software design and construction. Develops initial design and programming skills using a high-level language. Fundamental concepts of control structures, data structures, functional and object-oriented programming. Introduces topics in computer organization and social impact of technology. Prerequisite: enrollment open to ICS, CSE, and Computer Science majors in the Campuswide Honors Program or by consent of the Bren School of ICS. Only one course from ICS H21 and ICS 21/CSE21 may be taken for credit. May not be taken for credit after Informatics 42. **(II or V; IX)**

22 Introduction to Computer Science II (6). Abstract behavior of classic data structures (stacks, queues, sorted and unsorted maps), alternative implementations, analysis of time and space efficiency. Recursion. Object-oriented and functional programming. Prerequisite: ICS 21/CSE21 or ICS H21 with a grade of C or better. Same as CSE22. Only one course from ICS 22/CSE22, ICS H22, or Informatics 42 may be taken for credit. **(II or V)**

H22 Honors Introduction to Computer Science II (6). Abstract behavior of classic data structures (stacks, queues, sorted and unsorted maps), alternative implementations. Recursion. Mathematical analysis of time and space efficiency, program analysis and correctness, system design techniques, programming paradigms. Prerequisite: ICS H21 with a grade of B- or better or ICS 21/CSE 21 with a grade of A or better. Only one course from ICS H22, ICS 22/CSE22, Informatics 41, or Informatics 42 may be taken for credit. **(II or V)**

23 Fundamental Data Structures (4). Focuses on implementation and mathematical analysis of fundamental data structures and algorithms. Covers storage allocation and memory management techniques. Prerequisites: ICS 22/CSE22 or ICS H22 with a grade of C or better, *or* Informatics 42 with a grade of C or better, *or* Engineering EECS40. Same as CSE23. Only one course from ICS 23/CSE23 and ICS H23 may be taken for credit. **(V)**

H23 Honors Introduction to Computer Science III (4). Builds on ICS H22 with respect to mathematical tools and analysis. Focuses on fundamental algorithms in computer science, basic data structures for primary and secondary memory, storage allocation and management techniques, data description, and design techniques. Prerequisites: ICS H22 with a grade of B- or better or ICS 22/CSE 22 with a grade of A or better, or Informatics 42 with a grade of A or better. Only one course from ICS H23 and ICS 23/CSE23 may be taken for credit. **(V)**

51 Introductory Computer Organization (6). Multilevel view of system hardware and software. Operation and interconnection of hardware elements. Instruction sets and addressing modes. Virtual memory and operating systems. Laboratory work using low-level programming languages. Prerequisites: ICS 21 with a grade of C or better; ICS 6B/Mathematics 6B. **(II)**

52 Introduction to Software Engineering (6). Introduction to the concepts, methods, and current practice of software engineering. The study of large-scale software production; software life cycle models as an organizing structure; principles and techniques appropriate for each stage of production. Laboratory work involves a project illustrating these elements. Prerequisite: ICS 23 with a grade of C or better. Only one course from ICS 52, ICS 105, and Informatics 43 may be taken for credit.

60 Computer Games and Society (4). The study and critical analysis of computer games as art objects, cultural artifacts, gateways to virtual worlds, educational aids, and tools for persuasion and social change. Emphasis on understanding games in their historical and cultural context. ICS 60 and University Studies 12A-B-C may not both be taken for credit. **(III)**

61 Game Systems and Design (4). Principles and usage of game design elements. Introduction to technologies that support modern computer games. Students design, implement, and critique several small games. **(II)**

62 Game Technologies and Interactive Media (4). Technologies for interactive media and game design. Web-based software systems, virtual world platforms, and game engines. Emphasis on conceptual and architectural aspects of these technologies.

65 Advanced Programming with C++ (4). An introduction to the C++ language for experienced Java programmers. Emphasis on object-oriented design and using standard libraries. Prerequisite: ICS 23 or one year of Java programming.

77A, B, C, D Topics in Mathematics and Computation in the Digital Age. Lecture, three hours; laboratory, two hours. Corequisite: Mathematics 2J or 6G, or consent of instructor. Prerequisites: Mathematics 2A-B; ICS 21/CSE21 or Informatics 41 or consent of instructor. First- and second-year students only.

77A Introduction to Signal Processing (4). Signals in MATLAB; blurring, mixing, filtering; elements of linear algebra, statistics, optimization; blind matrix inversion; de-correlation method, stochastic gradient descent method, applications to sounds and images. Same as Mathematics 77A. **(II or V)**

77B Introduction to Collaborative Filtering (4). Basic concepts of collaborative filtering; clustering; matrix factorization and principal components analysis; regression; classification; naive Bayes classifier, decision trees, Perceptron (neural networks). Same as Mathematics 77B. **(II or V)**

77C Introduction to Image Processing (4). Image de-noising, de-blurring, low pass filtering; image segmention and classification; sparse representation; visualization. Same as Mathematics 77C. **(II or V)**

77D Introduction to Game Simulation and Analysis (4). Combinatorial Game Theory—game classification, tree graphs, strategy analysis, Sprague Grundy functions, Bouton's Theorem; Zero-Sum and General-Sum Game Theory—payoff matrices, Minimax Theorem, Nash equilibrium; machine learning—search algorithms. Same as Mathematics 77D. **(II or V)**

80 Special Topics in Information and Computer Science (2 to 4). May be repeated for credit if title or topic varies.

90 ICS: The First-Year Seminar (1). Introduces students to the Donald Bren School of Information and Computer Sciences. Activities focus on advising students making the transition to UCI, community building, and mostly surveying the technical areas within departments in ICS, via talks by faculty on their research. Pass/Not Pass only.

93 Strategies for Success in ICS (0). Develops students' study skills for ICS and general education requirement courses through instruction, small group activities, and application assignments. Topics include goal setting, note taking, text reading, examination preparation, memory and concentration, and problem solving. Two units of workload credit only. Pass/Not Pass only.

UPPER-DIVISION

105 Digital Information Systems (4). Design and analysis of digital information systems. Covers underlying database and network technology, and software engineering principles used to build these systems. Evaluating digital information systems, and recognizing common flaws and vulnerabilities. Prerequisite: one of the following with a grade of C or better: ICS 10, ICS/CSE21, ICS H21, Informatics 41. Only one course from ICS 52, ICS 105, and Informatics 43 may be taken for credit.

139 Critical Writing on Information Technology (4). Study and practice of critical writing and oral communication as it applies to information technology. Each student writes assignments of varying lengths, totaling at least 4,000 words. Prerequisite: satisfactory completion of the lower-division writing requirement; upper-division standing.

160 Game Engines and Hardware (4). Principles of computer architecture emphasizing hardware used with a general purpose processor to support high-performance computer games and graphics engines. Design of game engines and abstraction layers for this hardware. Prerequisite: ICS 51.

161 Game Engine Lab (4). The use of an industry standard game engine in the design and implementation of a new computer game. Principles of game engine design. Students work on a team to design, implement, and evaluate a new computer game based on an engine. Prerequisite: ICS 160.

162 Modeling and World Building (4). Use of 3D modeling software and related tools to design and create animated, textured models and expansive virtual worlds incorporating objects, scenes, and venues for activity within game worlds and online environments. Prerequisite: ICS 160.

163 Mobile and Ubiquitous Games (4). Design and technology of mobile games, including mixed reality gaming, urban games, and locative media. Case studies of significant systems. Uses and limitations of location-based technologies. Infrastructures and their relationships to gameplay and design. Prerequisite: ICS 160.

167 Multiplayer Game Systems (4). Foundations and technologies that enable multiuser, networked, and persistent virtual environments. Emphasis on database design and management, network protocols, and concurrency control to accommodate large numbers of simultaneous users. Prerequisite: ICS 160.

168 Multiplayer Game Project (4). Designing and implementing a multiuser, networked, and persistent virtual environment or game. Emphasis on cultural aspects, community building, user interface issues and design, security, privacy, and economics. Prerequisites: ICS 52 with a grade of C or better; ICS 167.

169A-B Capstone Game Project I, II (4-4). Students work in teams to design and implement a new computer game or virtual world. Emphasis on sound, art, and level design, building a community, cut scenes, production values, full utilization of hardware and software platform, and current industry trends. Prerequisites: ICS 167 and 168. In-progress grading for ICS 169A.

192 Industrial or Public Sector Field Study (2). Students participate in an off-campus, supervised internship for a minimum of 60 hours. Students apply classroom knowledge through internship projects in the private sector or nonprofit agencies. Prerequisite: approval of the ICS Associate Dean of Student Affairs. Pass/Not Pass only. May be taken for credit two times. **(IX)**

H197 Honors Seminar (2). An overview of computer science and selected recent trends in research. Students attend talks on current faculty research, with opportunities for discussion. Prerequisite: participation in the Bren School of ICS Honors Program or Campuswide Honors Program. Pass/Not Pass only.

GRADUATE

200 Seminar in Research in ICS (2). Graduate orientation program and colloquium series. Includes talks by ICS faculty in all areas about their current research. Satisfactory/Unsatisfactory only.

270 CPAST Interdisciplinary Theory Seminar: Special Topics (4). Counterposes technological discourses with fine arts discourses and practices, with a focus on historical contextualization, utilizing critical theory and science and technology studies perspectives. Topics vary and are not repeated in any three-year period. May be repeated for credit as topics vary.

271 CPAST Studio/Laboratory: Interactive Installation and Performance Design Workshop (4). Designing persuasive spatialized interactive experiences: spatially and temporally distributed narratives. User-system relationships. "Freedom" in interaction: authoriality and control. Audience and the spect-actor. Sensors, behavior logics, and multi-modal output. Machine learning and autopedagogic systems. Training in relevant technologies. May be taken twice for credit.

272 CPAST Studio/Laboratory: Games and Algorithmic Systems in Literature and the Arts (4). Explores the cultural tradition of the game and game play with particular reference to the automation of games in computational systems and the close relation between gaming, improvisation, hypertext, and interactive art. Game programming techniques and projects. May be taken twice for credit.

273 CPAST Studio/Laboratory: Spatial Interaction: Sensors and Input/Output (4). Designing and building sensor and effector systems for cultural applications. Sensors, sensor combinations, sensor data collection and interpretation, input/output techniques and devices.

274 CPAST Studio/Laboratory: Real Space Interaction (4). Designing and building machine artworks, motion control, mechatronic, animatronic, and mobile robotic projects. Mechanics, electromechanics, electronics, microcontrollers, motor control. Aesthetico-critical as well as technical aspects subject to assessment.

275 CPAST Studio/Laboratory: Cultural Practice in Immersive Media (4). Examines and moves beyond existing paradigms of virtuality. Sensor and input devices, their logics and limitations. Embodied and symbolic interaction. Panoramic and stereoscopic image technologies. Stereoscopic graphics and spatialized sound. Technical components and their integration. Collaborative projects.

276 CPAST Studio/Laboratory: Telematic Performance and Teleoperative Art (4). Art and performance projects utilizing real time and quasi-real time distance interaction. Synchronous performance and distributed choreography. Network technologies and protocols. Speed, bandwidth, latency. Web-based technologies. Video and sound. Teleoperation/remote machine control. Same as Dance 276.

277 CPAST Studio/Laboratory: Special Topics (4). Focuses on currently emerging technologies, techniques, and cultural and critical issues. May be repeated for credit as topics vary.

278 CPAST Thesis Research (4 to 12). Independent research for thesis and thesis project. May be taken for a total of 36 units.

279 Special Topics in Critical Practices in Art, Science and Technology (4). Prerequisites vary. May be repeated for credit as topics vary.

398A Teaching Assistant Training Seminar (2). Theories, methods, and resources for teaching computer science at the university level, particularly by teaching assistants. Classroom presentations, working with individuals, grading, motivating students. Participants will give and critique presentations and may be videotaped while teaching. Satisfactory/Unsatisfactory only.

398B Advanced Teaching Assistant Seminar (4). Teaching computer science at the university level, emphasizing issues in teaching an entire course. Course organization, designing examinations and projects, grading, motivating students. Participants will begin to assemble teaching portfolios. Satisfactory/Unsatisfactory only. Prerequisite: ICS 398A or consent of instructor.

399 University Teaching (4). Involves on-the-job experience for Teaching Assistants. Limited to and required of Teaching Assistants.

DEPARTMENT OF COMPUTER SCIENCE

3019 Donald Bren Hall; (949) 824-0016
Lubomir Bic, **Department Chair**
David Eppstein, **Department Co-Chair**

Faculty

James Arvo: Computer graphics, global illumination, human-computer interaction
Pierre Baldi: Bioinformatics, machine learning
Lichun Bao: Protocol design and performance evaluation of wireless and mobile communication networks
Lubomir Bic: Parallel and distributed computing, mobile agents
Elaheh Bozorgzadeh: Design automation and synthesis for embedded systems, VLSI CAD, and reconfigurable computing
Michael Carey: Database systems, information integration, service-oriented computing
Rina Dechter: Complexity of automated reasoning models, constraint-based reasoning, distributed connectionist models, causal models, probabilistic reasoning
Michael Dillencourt: Computational geometry, analysis of algorithms, data structures
Nikil Dutt: Design modeling, languages and synthesis, CAD tools, computer architecture
Magda El Zarki: Telecommunications, networks, wireless communication, video transmission
David Eppstein: Analysis of algorithms, computational geometry, graph theory
Julian Feldman: Management of computing resources; problems involved in managing the computer resources of an organization, including resource allocation and financing organizations; the teaching of programming, and development of techniques which will facilitate the learning of programming
Charless Fowlkes: Artificial Intelligence, automated reasoning, machine learning, data mining, biomedical informatics, computational biology
Stephen Franklin: Computer- and network-based educational technology, IT resource management
Michael Franz: Programming languages and their implementation; extensible systems; software architectures, component-ware and portable software that migrates across computer networks
Daniel Frost: Artificial intelligence, software engineering, computer graphics, teaching of programming
Tony Givargis: Embedded systems, platform-based system-on-a-chip design, low-power electronics
Michael Goodrich: Computer security, algorithm design, data structures, Internet algorithmics, geometric computing, graphic drawing
Richard Granger: Computational and cognitive neuroscience
Ian Harris: Hardware/software covalidation, manufacturing test
Wayne Hayes: High-performance scientific computing, dynamical systems and chaos, applied mathematics, graph theory, optimization
Daniel Hirschberg: Analysis of algorithms, concrete complexity, data structures, models of computation
Alexander Ihler: Artificial intelligence, automated reasoning, machine learning, data mining
Sandy Irani: Analysis of algorithms; online algorithms; graph theory and combinatorics
Norman Jacobson: Computer science education, ethics in computing, forensic computing
Ramesh C. Jain: Computer vision, media information systems, experimental environments
Stanislaw Jarecki: Cryptography, security, fault-tolerant distributed computing
Scott Jordan: Pricing and differentiated services in the Internet, resource allocation in wireless multimedia networks, and telecommunications policy
David G. Kay: Computer law, computer science education
Dennis Kibler: Machine learning, genomic analysis
Alfred Kobsa: User modeling, human-computer interaction, artificial intelligence, cognitive science, interdisciplinary computer science
Richard Lathrop: Modeling structure and function, machine learning, intelligent systems and molecular biology, protein structure/function prediction
Chen Li: Database systems, data integration, multimedia information systems, Web-based database systems, semi-structured data systems
George Lueker: Computational complexity; probabilistic analysis of algorithms; data structures
Aditi Majumder: Computer graphics and visualization, large area displays, human-computer interaction
Gopi Meenakshisundaram: Geometry and topology for computer graphics, image-based rendering, object representation, surface reconstruction, collision detection, virtual reality, telepresence
Sharad Mehrotra: Multimedia information systems, multidimensional databases, uncertainty processing in databases, data structures, information retrieval, distributed databases, workflow automation
Eric Mjolsness: Neural networks, computational biology, bioinformatics, artificial intelligence, machine learning
Alexandru Nicolau: Architecture, parallel computation, and programming languages and compilers
Richard Pattis: Microworlds for teaching programming, debugging, computational tools for non-computer scientists
Natasa Przulj: Biomedical informatics, computational biology
Deva Ramanan: Artificial intelligence: automated reasoning, machine learning, data mining; large-scale data analysis: information access and management, databases, information infrastructure; computer graphics, visualization, digital arts
Amelia Regan: Operations research, network optimization, data mining
Isaac Scherson: Parallel computing architectures, massively parallel systems, parallel algorithms, complexity, orthogonal multiprocessing systems
Padhraic Smyth: Statistical pattern recognition, automated analysis of large data sets, applications of probability and statistics to problems in artificial intelligence
Tatsuya Suda: Computer networks; distributed systems; performance evaluation
Shannon Tauro: Embedded computer systems
Alex Thornton: Computer science education, programming languages, compilers
Gene Tsudik: Security and cryptography, networks and operating systems
Alexander Veidenbaum: Computer architecture, interconnection networks, compilers, embedded systems
Nalini Venkatasubramanian: Parallel and distributed systems, multimedia servers and applications, internetworking, high-performance architectures, resource management
Max Welling: Statistical machine learning and probabilistic inference with applications to pattern recognition and computer vision
Xiaohui Xie: Artificial intelligence, automated reasoning, machine learning, data mining, biomedical informatics, computational biology

Affiliated Faculty

Nader Bagherzadeh: Parallel processing, computer architecture, computer graphics, VLSI design
Pai Chou: Hardware/software co-design, embedded systems, component-based design, specification methodology, interface synthesis, real-time systems
Paul Dourish: Human-computer interaction, computer-supported cooperative work
Daniel Gajski: Computer and information systems, software/hardware codesign, algorithms and methodologies for embedded systems, CAD environments, science of design
Jean-Luc Gaudiot: Parallel processing, computer architecture, processor architecture
Fadi Kurdahi: VLSI system design, design automation of digital systems
Cristina Videira Lopes: Programming languages, acoustic communications, operating systems, software engineering
Alice Silverberg: Theory of abelian varieties, application of arithmetic algebraic geometry to cryptography
Mark Steyvers: Computational models of memory, reasoning, and perception
Hong-Kai Zhao: Computational applied mathematics

Undergraduate Major in Biomedical Computing

Biomedical Computing (BMC) is the intersection of computer science and information technology with biology and medicine. The immense growth and impact of biomedical information has led to a critical need for people who can understand the languages, tools, and techniques of both life sciences and computational sciences. The Biomedical Computing program aims to create a new generation of professionals with these complementary cross-disciplinary skills.

The degree program in Biomedical Computing will (1) provide students with a solid foundation in computer science, quantitative methods, and biomedical computing; (2) introduce students to biomedical computing problems and the corresponding computer science perspective; (3) teach students the fundamental principles, methods, and technologies for addressing these problems; and (4) provide students with extensive practice in biomedical computing.

In the lower-division program, students acquire a firm quantitative grounding in mathematics, statistics, and computation; become familiar with the basic foundations of physics and chemistry; and learn the fundamentals of molecular biology from a computational perspective. In the upper-division program, students take a year-long Biomedical Computing sequence; study theory, algorithms, data mining, and machine learning; and take several quantitative and biological electives. The year-long immersive capstone Senior Project unifies theory and practice as applied to an intensive and meaningful real-world biomedical computing problem. By the end of the four-year degree program students will have mastered the theory, context, application, and practice of Biomedical Computing.

Students who complete the major requirements will be able to do the following: synthesize computer science, quantitative methods, and biological science; understand the synergistic set of reciprocal influences between life and computational sciences and technologies; discuss biomedical computing problems and corresponding computer science perspectives; employ principles, methods, and technologies fundamental to biomedical computing; and design and develop software that solves biomedical computing problems.

Career Paths. Graduates have considerable opportunities in the employment sector. The combined health care and biomedical industry is the nation's largest industrial sector, and computational methods increasingly play a driving role. For example, in the fast-paced pharmaceutical or biotechnology industries, the highest projected recruiting demand is for medical, biological, and computer research personnel. Students also would flow easily into many different graduate degree programs.

ADMISSIONS

Freshmen Applicants:

Completion of four years of mathematics through at least the pre-calculus level. Students should have strong reading, writing, and math skills including critical, logical thinking. Course work in computer science or computer programming is not expected of incoming students.

Transfer Applicants:

Applicants who satisfactorily complete course requirements will be given preference for admission. Applicants must satisfy at least the following requirements:

1. Completion of one year of discrete mathematics or one year of calculus, preferably both. A semester of pre-calculus and a semester of calculus are not sufficient to satisfy this requirement.
2. Completion of one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language.
3. Completion of one year of introductory physics and corresponding labs covering at least the concepts of units, vectors, motion, force, energy; momentum, rotation, gravity, electricity, and magnetism.
4. Completion of an introductory biology course covering at least the concepts of genetics, replication and expression of DNA, cell division, gene transmission, mutation, and recombination in diploid organisms.

*NOTE: Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Transfer students must enter UCI with knowledge of Java since it is used in many of the lower-division Biomedical Computing requirements and serves as a foundation for upper-division programming-related courses.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree. Knowledge of basic concepts in molecular biology is also highly recommended.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOMEDICAL COMPUTING

University Requirements: See pages 55–62.

Major Requirements

Lower-division (some or all of these are prerequisites for required upper-division courses):

A. ICS 21, ICS 22, ICS 23, ICS 51, and ICS 52.

B. Mathematics 2A-B, Mathematics 2D, Mathematics 6G or 3A, ICS/Mathematics 6B, ICS/Mathematics 6D, and Statistics/Mathematics 67.

C. Physics 7C, 7LC and Physics 7D, 7LD.

D. Chemistry 1A-B and Chemistry 1LE.

E. Biological Sciences 9C, 93, 94, and 97 (students may substitute one additional biology elective from the list in Upper-Division section A below, not already used to satisfy a degree requirement of the major, for Biological Sciences 9C).

Upper-division:

A. CS 183/Biological Sciences M123 and one biology elective from the following list: Biological Sciences N110, M133, D137, D155, or E153.

B. Three quantitative electives from the following list: CS 121/Informatics 141, CS 122A, CS 122B, CS 163, CS 169, CS 171, CS 177, Informatics 111, Informatics 115, Informatics 131, Informatics 143, Informatics 161, Informatics 171, Statistics 110, Mathematics 3D, Mathematics 13, Biomedical Engineering 110A-B-C, Biomedical Engineering 145, Biomedical Engineering 146.

C. CS 161, CS 178, CS 184A, CS 184B, CS 184C, CS 189A-B-C.

Major and minor restrictions: See pages 342–343.

Sample Program of Study — Biomedical Computing

FALL	WINTER	SPRING
Freshman		
ICS 21	ICS 22	ICS 23
Math 2A	Math 2B	Math 2D
Bio. Sci. 93	Bio. Sci. 94 (Physics 2 if needed)	Bio. Sci. 9C Writing 39B
Sophomore		
ICS 6D/Math 6D	Math 6G or 3A	Math 67/Stats 67
ICS 6B/Math 6B	ICS 51	ICS 52
Writing 39C	Physics 7C, 7LC	Physics 7D, 7LD
Bio. Sci. 97		CS 183/Bio. Sci. M123
Junior		
CS 184A	CS 184B	CS 184C
Chem 1A	Chem 1B, 1LE	Biology Elective
CS 178	CS 161	Gen. Ed. (III/VII/VIII)
Gen. Ed. (III/VII/VIII)		
Senior		
CS 189A	CS 189B	CS 189C
Quantitative Elective	Quantitative Elective	Quantitative Elective
Gen. Ed. (VI)	Gen. Ed. (III/VII/VIII)	Upper-Div. Writing
Gen. Ed. (IV)	Gen. Ed. (IV)	Gen. Ed. (IV)

Minor in Biomedical Computing

The minor provides a focused study of biomedical computing to supplement a student's major program of study and prepares students for a profession, career, or academic pursuit in which biomedical computing is an integral part but is not the primary focus. The Biomedical Computing minor contributes to students' competence in computing applied to biomedical problems and data, as well as exposing them to the fundamentals of the life sciences from a computer science perspective. The minor allows students sufficient flexibility to pursue courses that complement their major field or address specific interests.

Students who complete the minor requirements will be able to do the following: synthesize computer science, quantitative methods, and biological science; understand the synergistic set of reciprocal influences between life and computational sciences and technologies; discuss biomedical computing problems and corresponding computer science perspectives; and employ principles, methods, and technologies fundamental to biomedical computing.

Requirements for the Minor: ICS 21, ICS 22, ICS 23; Biological Sciences 9C, 93, 94; CS 183/Biological Sciences M123, CS 184A, CS 184B, and CS 184C.

Undergraduate Major in Computer Science

The undergraduate major in Computer Science provides a solid foundation in computer science, focusing especially on algorithms, data structures, artificial intelligence and machine learning, database systems, networked systems, programming languages, compilers, operating systems, digital logic, and computer architecture. This major can serve as preparation for either graduate study or a career in industry. Computer Science majors may also choose to complete the Game Culture and Technology concentration, an interdisciplinary course of study requiring a total of eight courses (32 units) from the Bren School of ICS and Claire Trevor School of the Arts (Department of Studio Art); admission criteria and course requirements are described on page 344.

The Department also offers a joint undergraduate degree in Computer Science and Engineering, in conjunction with The Henry Samueli School of Engineering; information is available in the Interdisciplinary Studies section of the *Catalogue.*

ADMISSIONS

Freshman Applicants: See pages 33–37.

Transfer Applicants:

Junior-level applicants who satisfactorily complete course requirements will be given preference for admission. Applicants must satisfy the following requirements:

1. One year of discrete mathematics, if available; if not, first-year calculus.
2. Completion of one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language.

*NOTE: Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree.

REQUIREMENTS FOR THE B.S. DEGREE IN COMPUTER SCIENCE

University Requirements: See pages 55–62.

Major Requirements

Lower-division (some or all of the items listed in A and B are prerequisites for required upper-division ICS courses):

A. Mathematics 2A-B, ICS 6B/Mathematics 6B, ICS 6D/Mathematics 6D, Mathematics 6G or 3A, Statistics 67/Mathematics 67, Philosophy 29 or 30 or Mathematics 13.

B. ICS 21, 22, 23, 51, 52.

C. A science sequence chosen from Physics 3A-B-C and 3LB-LC; Physics 2, 7C and 7D or 7E with corresponding laboratories; Chemistry 1A-B-C and 1LB-LC or Chemistry H2A-B-C and H2LA-LB-LC; or Biological Sciences 93, 94, 97, 100L, and 194S.

Upper-division:

A. ICS 139.

B. *CS Core requirements:* CS 132; CS 141; CS 142A; CS 143A; CS 151; CS 152; CS 161*; one of CS 162, 163, 164, 167, 168, or 169; CS 171.

C. Three project courses selected from the following list: CS 113, CS 114, CS 122B, CS 133, CS 142B, CS 143B, CS 153, CS 154, CS 165, CS 175, and Informatics 117.

D. Eight additional upper-division units selected from the following list: CS 111–189, Informatics 102, 111, 113, 115, 117, 118A, 118B, 119, 123, 125, 131, 132, 141, 153, 161, 162, and 163.

No course may be counted toward more than one of the above categories.

*CS majors must enroll in CS 161 no later than the second quarter after they have earned 90 units.

Major and minor restrictions: See pages 342–343.

Sample Program of Study — Computer Science

FALL	WINTER	SPRING
Freshman		
ICS 21	ICS 22	ICS 23
Math 2A	Math 2B	ICS 6B/Math 6B
UC Entry Level Writing	Gen. Ed. (I)	Gen. Ed. (I)
Sophomore		
ICS 51	ICS 52	CS UD Core
ICS 6D/Math 6D	Math 6G	Stats 67/Math 67
Science Elective	Science Elective	Science Elective
Gen. Ed. (III/VII/VIII)	Gen. Ed. (III/VII/VIII)	Gen. Ed. (III/VII/VIII)
Junior		
CS 161*	CS UD Core	CS UD Core
CS UD Core	CS UD Core	CS UD Core
Phil 29/30 or Math 13	CS UD Core	ICS 139
Gen. Ed. (III/VII/VIII)	Gen. Ed. (III/VII/VIII)	Gen. Ed. (VI)
Senior		
CS Project	CS Project	CS Project
CS Elective	CS Elective	CS UD Core
Gen. Ed. (IV)	Gen. Ed. (IV)	Gen. Ed. (IV)
Gen. Ed. (IX)		

* CS majors must enroll in CS 161 no later than the second quarter after they have earned 90 units.

NOTE: CS upper-division core, project, and elective requirements may be satisfied by specific Computer Science and Informatics courses. See the requirements listed above.

Undergraduate Major in Computer Science and Engineering (CSE)

This program is administered jointly by the Department of Computer Science in the Bren School of ICS, and the Department of Electrical Engineering and Computer Science (EECS) in The Henry Samueli School of Engineering. For information, see the Interdisciplinary Studies section of the *Catalogue*, page 370.

REQUIREMENTS FOR THE B.S. DEGREE IN COMPUTER SCIENCE AND ENGINEERING

University Requirements: See pages 55–62.

Major Requirements: See page 370 in the Interdisciplinary Studies section of the *Catalogue*.

Graduate Program in Computer Science

The field of Computer Science is concerned with the design, analysis, and implementation of computer systems as well as the use of computation as it is applied to virtually every field of study and use in the everyday world. Computer systems can range in scope from small embedded systems to the Internet as a whole. Research in computer science involves mathematical analysis, empirical experimentation, and the implementation of prototype systems. Core research areas include artificial intelligence and machine learning, bioinformatics, computer architecture, embedded systems, graphics and visual computing, databases and information management, multimedia, networked and distributed systems, programming languages and compilers, security and cryptography, design and analysis of algorithms, scientific computing, and ubiquitous computing.

The M.S. and Ph.D. degrees in Computer Science (CS) are broad and flexible programs which offer students opportunities for graduate study in the full spectrum of intellectual activity in computer science.

MASTER OF SCIENCE IN COMPUTER SCIENCE

The course requirements for the M.S. are identical to those of the Ph.D., although completion plans differ. See page 347 for additional information about the M.S. completion plan options.

See page 347 for additional information about the Bren School of ICS's graduate programs and general information about admissions.

DOCTOR OF PHILOSOPHY IN COMPUTER SCIENCE

Required Courses

Each student must complete at least 46 units with an average GPA of 3.5 and at least a B in each course. The set of core and elective courses chosen by a student must be approved by the student's research advisor before advancement to candidacy. Faculty associated with each research area will provide suggested curricula for that area to guide students in their selection of courses. These curricula will also help Ph.D. students to prepare for their candidacy examination (see below) which must be taken in a specific research area.

Students must complete ICS 200, four core courses, and seven elective courses. The course requirements are as follows:

Students must select four areas from the list of seven areas given below. From each area, they must select at least one of the courses listed for that area.

Area	*Core Courses*
1. Data Structures and Algorithms:	CS 260
2. Computer Architecture and Design:	CS 250A
3. System Software:	CS 241
4. Artificial Intelligence:	CS 271
5. Networks and Distributed Systems:	CS 232 or CS 230
6. Database Systems:	CS 222
7. Scientific and Visual Computing:	CS 206 or CS 211A or CS 278

Seven elective courses from any set of CS, Informatics, or Statistics courses, including the above core courses, but excluding CS 290, 298, 299, or any course with a suffix of "S."

Two of these courses can be graduate courses offered by a department outside of ICS, with written consent of the advisor (M.S. students must obtain written consent from the Computer Science Vice Chair for Graduate Studies).

No more than two CS 295s may be taken to satisfy elective course requirements.

Ph.D. students are required to serve as teaching assistants for at least two quarters.

Research Project for the Ph.D. Degree

Doctoral students must find a faculty advisor and successfully complete a research project with that faculty member by the end of their second year. In coordination with this project the student must also take at least one independent studies course (CS 299) with their faculty advisor. The objective of the research project is to demonstrate early in the program the student's ability to carry out basic research in computer science.

Finally, the student must present the outcome of the research in a technical report, which must be approved by the advisor. The project may or may not be a stepping-stone toward a dissertation, and must be completed by the end of the second year, and prior to advancement to candidacy.

Advancement to Candidacy Examination

The objective of the candidacy examination is to demonstrate in-depth knowledge of an area of computer science and readiness to carry out independent research at the doctoral level in that area. The student must complete all pre-candidacy course requirements and the research project prior to advancing to candidacy. All

requirements for candidacy including the candidacy examination must be completed by the end of the third year (or, for students entering the program with an M.S. in Computer Science, by the end of the second year). If the student does not pass on the first trial, the student will be allowed until the end of the first quarter of the fourth year to advance to candidacy. Consult the ICS Graduate Office for policies regarding committee membership. The format is an oral examination during which the student is tested on knowledge relevant to the chosen area of specialization. Each area is defined by a set of topics and reading list, which are maintained by the Computer Science Department office. New areas or changes to existing areas must be approved by a majority vote of the CS faculty in accordance with the Department's bylaws. The current areas include the following: Algorithms and Data Structures; Computer Architecture and Embedded Systems; Database Systems and Multimedia; Computer Networks; Distributed Systems; Artificial Intelligence and Machine Learning; Informatics in Biology and Medicine; Computer Graphics and Visual Computing; Cryptography and Computer Security; Computational Neuroscience; Scientific Computing; Systems Software.

The examination is graded pass or fail. In order to pass, the Candidacy Committee must unanimously approve the final outcome. In the case of a fail, the examination may be retaken once. Students who fail on the second try will be recommended for disqualification from the doctoral program.

Doctoral Dissertation Topic Defense

The student must produce a substantial written document representing the dissertation plan. This must include the proposed dissertation abstract, a dissertation outline, and a detailed plan for completing the work. A dissertation defense committee is formed in accordance with UCI Senate regulations. The dissertation committee must unanimously approve the student's proposal. At the discretion of the student's advisor, the student may be required to give an oral presentation of the proposed plan to the committee. This must be completed by the end of the fourth year. It is expected that this will be done at least a year prior to the final examination and before most of the dissertation research and writing are undertaken. The idea is for students to demonstrate that they have a clear plan for carrying out the research for their dissertation. It also gives the student an understanding of what will be expected for final approval of the dissertation.

Doctoral Dissertation and Final Examination

Ph.D. students are required to complete a Ph.D. dissertation in accordance with Academic Senate regulations. In addition, they must pass an oral dissertation defense which consists of a public seminar presenting results followed by a private examination by the doctoral committee and other interested members of the Computer Science Department faculty.

Students entering the Ph.D. program with an M.S. in Computer Science must advance to candidacy within two years. All others must advance within three years. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Graduate Program in Mathematical and Computational Biology

The graduate program in Mathematical and Computational Biology (MCB) is a one-year "gateway" program designed to function in concert with selected graduate programs, including the Ph.D. in Computer Science. The time to degree for students entering the Ph.D. program in Computer Science from MCB begins when the student first transfers to the Computer Science program. Detailed information is available online at http://mcsb.bio.uci.edu/ and in the School of Biological Sciences section of the *Catalogue,* page 146.

Courses in Computer Science

(Schedule of Classes **designation: CompSci)**

UPPER-DIVISION

111 Digital Image Processing (4). Introduction to the fundamental concepts of digital signal and image processing as applicable in areas such as multimedia, graphics, AI, data mining, databases, vision, or video games. Topics include image representation, space- and frequency-domain transformations, filters, segmentation, and compression. Prerequisites: ICS 23/CSE23, ICS 6D/Mathematics 6D, and Mathematics 6G or 3A with grades of C or better. CS 111 and EECS107 may not both be taken for credit. Formerly ICS 181.

112 Computer Graphics (4). Introduction to the fundamental principles of 3D computer graphics including polygonal modeling, geometric transformations, visibility algorithms, illumination models, texturing, and rasterization. Use of an independently-learned 3D graphics API to implement these techniques. Prerequisite: ICS 22/CSE22 or ICS H22 with a grade of C or better. Formerly ICS 183.

113 Computer Game Development (4). Introduction to the principles of interactive two- and three-dimensional computer game development. Concepts in computer graphics, algorithms, software engineering, art and graphics, music and sound, story analysis, and artificial intelligence are presented and are the basis for student work. Prerequisite: either CS 112, CS 171, Informatics 121, Studio Art 135, or consent of instructor. Same as Informatics 125. Formerly ICS 187.

114 Projects in Advanced 3D Computer Graphics (4). Projects in advanced 3D graphics such as illumination, geometric modeling, visualization, and animation. Topics may include physically based and global illumination, solid modeling, curved surfaces, multiresolution modeling, image-based rendering, basic concepts of animation, and scientific visualization. Prerequisite: CS 112 or equivalent; recommended: CS 161/CSE161, CS 164, CS 165.

115 Computer Simulation (4). Discrete event-driven simulation; continuous system simulation; basic probability as pertaining to input distributions and output analysis; stochastic and deterministic simulation; static and dynamic system simulation. Prerequisites: ICS 6B/Mathematics 6B, Mathematics 6G, Mathematics 67/Statistics 67, ICS 51, and either ICS 52 or Informatics 43, all with grade of C or better; upper-division standing.

116 Computational Photography and Vision (4). Introduces the problems of computer vision through the application of computational photography. Specific topics include photo-editing (image warping, compositing, hole filling), panoramic image stitching, and face detection for digital photographs. Prerequisites: ICS 6D/Mathematics 6D, Mathematics 6G or 3A, Mathematics 2A-B, ICS 23.

117 Project in Computer Vision (4). Students undertake construction of a computer vision system. Topics may include automatically building 3D models from photographs, searching photo collections, robot navigation, and human motion tracking. Prerequisite: CS 116 or consent of instructor.

121 Information Retrieval (4). An introduction to information retrieval including indexing, retrieval, classifying, and clustering text and multimedia documents. Prerequisites: ICS 23/CSE23/ICS H23 or Informatics 43; Statistics 7/Mathematics 7 or Statistics 67/Mathematics 67. Same as Informatics 141.

122A Introduction to Data Management (4). Introduction to the design of databases and the use of database management systems (DBMS) for applications. Topics include entity-relationship modeling for design, relational data model, relational algebra, relational design theory, and Structured Query Language (SQL) programming. Prerequisite: one from ICS 23, ICS H23, Informatics 45, or EECS114, with a grade of C or better. Same as Engineering EECS116.

122B Project in Databases and Web Applications (4). Introduces students to advanced database technologies and Web applications. Topics include but are not limited to database connectivity (ODBC/JDBC), extending databases using stored procedures, database administration, Web servers, Web programming languages (Java servlets and Ruby on Rails), XML, and Ajax. Prerequisite: CS 122A/EECS116.

125 Next Generation Search Systems (4). Discusses concepts and techniques related to all aspects of search systems. After considering basic search technology and the state-of-art systems, rapidly developing techniques for multimedia search, local search, event-search, and video-on-demand are explored. Prerequisites: ICS 21/CSE 21 or Informatics 41 or consent of instructor; upper-division standing. Concurrent with CS 225.

131 Distributed Computing (4). Introduction to systems implemented within network-based computer architectures. Issues in distributed programming, operating systems, and applications. Specific topics covered include programming constructs, timing/coordination problems, data/service replication, transactions/concurrency control, fault-tolerance, recovery, file systems, security. Prerequisite: CS 141/CSE141/Informatics 101. Recommended: CS 132.

132 Computer Networks (4). An introductory course on computer network architectures. Layering approach of communication protocols is introduced, and the function of each layer is explained. Various examples are shown from long-haul networks and local area networks to B-ISDN and high speed networks. Prerequisites: ICS 23/CSE23 or ICS H23 with a grade of C or better; ICS 51 with a grade of C or better, or CSE132/EECS112; ICS 6D/Mathematics 6D; ICS 6B/Mathematics 6B; Mathematics 6G or 3A. Formerly ICS 153.

133 Advanced Computer Networks (4). Fundamental principles in computer networks are applied to obtain practical experience and skills necessary for designing and implementing computer networks, protocols, and network applications. Various network design techniques, simulation techniques, and UNIX network programming are covered. Prerequisite: CS 132 or equivalent, or consent of instructor.

134 Computer and Network Security (4). Overview of modern computer and networks security, attacks, and countermeasures. Authentication, identification, data secrecy, data integrity, authorization, access control, computer viruses, network security. Also covers secure e-commerce and applications of public key methods, digital certificates, and credentials. Prerequisites: ICS 6D/Mathematics 6D; ICS 22/CSE22 or Informatics 42; and one from CS 122A/EECS 116, CS 132, or CS 143A/CSE104. Formerly ICS 168.

141 Concepts in Programming Languages I (4). In-depth study of several contemporary programming languages stressing variety in data structures, operations, notation, and control. Examination of different programming paradigms, such as logic programming, functional programming and object-oriented programming; implementation strategies, programming environments, and programming style. Prerequisites: Informatics 42 or ICS 51 or CSE31/EECS31 with a grade of C or better, and Informatics 45 or ICS23/CSE23 with a grade of C or better. Same as CSE141/Informatics 101.

142A Compilers and Interpreters (4). Introduction to the theory of programming language processors covering lexical analysis, syntax analysis, semantic analysis, intermediate representations, code generation, optimization, interpretation, and run-time support. Prerequisite: CS 141/CSE141/Informatics 101. Same as CSE142. Formerly ICS 142.

142B Language Processor Construction (4). Project course which provides working laboratory experience with construction and behavior of compilers and interpreters. Students build actual language processors and perform experiments which reveal their behaviors. Prerequisite: CS 142A/CSE142.

143A Principles of Operating Systems (4). Principles and concepts of process and resource management, especially as seen in operating systems. Processes, memory management, protection, scheduling, file systems, and I/O systems are covered. Concepts illustrated in the context of several well-known systems. Prerequisites: ICS 23/CSE23, and ICS 51 or EECS31/CSE31 with grades of C or better. Same as CSE104. Only one course from CS 143A/CSE104 and EECS111 may be taken for credit.

143B Project in Operating System Organization (4). Detailed specification and design of critical components of an actual operating system including a memory manager, a process server, and a file/IO subsystem. Hardware/software tradeoffs. Emphasis on logical organization of system and communication. Prerequisite: CS 143A/CSE104.

144 High-Performance Computers and Program Optimization (4). Analyzes the relationship between computer architecture and program optimization. High-performance and parallelizing compilers for RISC, Superscalar, and VLIW architectures are discussed. Prerequisite: ICS 51 with a grade of C or better. Recommended: CS 142A.

145A Embedded Computing Systems (4). Principles of embedded computing systems: embedded systems architecture, hardware/software components, system software and interfacing, real-time operating systems, hardware/software co-development, and communication issues. Examples of embedded computing in real-world application domains. Simple programming using an embedded systems development environment. Prerequisites: ICS 23/CSE23, ICS 51 or CSE31 and CSE132. Formerly ICS 53.

145B Embedded Computing System Laboratory (2). Laboratory to accompany CS 145A. Corequisite: CS 145A.

146 Programming in Multitasking Operating Systems (4). User- and systems-level programming of modern Internet-connected, multi-user, multitasking operating systems. Shells, scripting, filters, pipelines, programmability, extensibility, concurrency, inter-process communication. Concrete examples of a modern operating system (such as, but not necessarily, Unix programmed in C) are used. Prerequisites: ICS 23/CSE23 and ICS 51 with grades of C or better. Recommended: CS 143A.

151 Digital Logic Design (4). Boolean algebra. Design/analysis of combinational and sequential systems using SSI/MSI/LSI modules. Number systems. Error detecting and correction codes. Arithmetic algorithms. Hardware/firmware implementation of algorithms. Prerequisites: ICS 23/CSE23 and ICS 51 with grades of C or better; ICS 6D/Mathematics 6D; ICS 6B/Mathematics 6B. Formerly ICS 151.

152 Computer Systems Architecture (4). Design of computer elements: ALU, control unit, and arithmetic circuits. Memory hierarchy and organization. Caches. Function unit sharing and pipelining. I/O and interrupt processing. RTL and behavioral modeling using hardware description languages. Microprocessor organization and implementation techniques. Prerequisite: CS 151. Only one course from CS 152, CSE132/EECS112, and CSEH132/EECSH112 may be taken for credit.

153 Logic Design Laboratory (4). Introduction to standard integrated circuits: gates, flip-flops, shift registers, counters, latches. Construction and debugging techniques. Design of digital systems using LSI and MSI components. Practical use of circuits in a laboratory environment, including implementation of small digital systems such as arithmetic modules, displays, and timers. Prerequisite or corequisite: CS 151.

154 Computer Design Laboratory (4). Design of basic computer components and small complete digital systems. Emphasis on practical use of Computer-Aided Design (CAD) tools, modeling of computer systems, and design practices in a laboratory environment. Prerequisite or corequisite: CS 151.

161 Design and Analysis of Algorithms (4). Time and space complexity of algorithms. Models of computation, techniques for efficient algorithm design, effect of data structure choice on efficiency of an algorithm. Fast algorithms for problems such as sorting, set manipulation, graph problems, matrix multiplication, Fourier transforms, and pattern matching. NP-complete problems. Prerequisites: ICS 23/CSE23 and ICS 51 or CSE31/EECS31 with grades of C or better; ICS 6D/Mathematics 6D; ICS 6B/Mathematics 6B; Mathematics 6G or 3A; Mathematics 2B. Same as CSE161.

162 Formal Languages and Automata (4). Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability; Turing machines, random access machines, undecidable problems, NP-completeness. Prerequisites: ICS 23/CSE23 and ICS 51 with grades of C or better; Mathematics 2A-B and Statistics 67/Mathematics 67; ICS 6D/Mathematics 6D; ICS 6B/Mathematics 6B; Mathematics 6G or 3A. Same as Linguistics 102.

163 Graph Algorithms (4). Algorithms for solving fundamental problems in graph theory. Graph representations, graph traversal, network flow, connectivity, graph layout, matching problems. Prerequisite: CS 161/CSE161.

164 Principles of Computational Geometry (4). Algorithms and data structures for geometric computation and graphics programming. Fundamental problems of computational geometry such as convex hulls, Voronoi diagrams, Delaunay triangulations, polygon partitioning, arrangements, geometric searching, hidden surface elimination, motion planning. Prerequisite: CS 161/CSE161 or equivalent.

165 Project in Algorithms and Data Structures (4). Design, implementation, execution, and analysis of algorithms for problems such as sorting, searching, data compression, and data encryption. Time-space-structure trade-offs. Prerequisite: CS 161/CSE161.

167 Introduction to Applied Cryptography (4). An introduction to the essential aspects of applied cryptography, as it is used in practice. Topics include classical cryptography, block ciphers, stream ciphers, public-key cryptography, digital signatures, one-way hash functions, basic cryptographic protocols, and digital certificates and credentials. Prerequisites: ICS 6D/Mathematics 6D; ICS 22/CSE22 or Informatics 42; CS 161/CSE161 and/or upper-division standing.

168 Network Optimization (4). Network modeling techniques and related algorithms for solving large-scale integer programming problems. Exact methods and heuristic techniques. Applications include computer and communications networks and transportation and logistics networks. Prerequisite: upper-division standing or consent of instructor.

169 Introduction to Optimization (4). A broad introduction to optimization. Unconstrained and constrained optimization. Equality and inequality constraints. Linear and integer programming. Stochastic dynamic programming. Prerequisites: Mathematics 2D, Mathematics 3A or 6G, Mathematics 67/Statistics 67. Concurrent with CS 268.

171 Introduction to Artificial Intelligence (4). Different means of representing knowledge and uses of representations in heuristic problem solving. Representations considered include predicate logic, semantic nets, procedural representations, natural language grammars, and search trees. Prerequisites: ICS 23; Mathematics 2A-B and Statistics 67/Mathematics 67.

174 Bioinformatics (4). Introduces fundamental problems in biology that lend themselves to computational approaches. The lectures present the necessary biological background to understand the importance of the problem and the data available for algorithmic analysis. Prerequisites: ICS 21/CSE21, ICS 22/CSE22, and ICS 23/CSE23; CS 171 with a grade of C or better.

175 Project in Artificial Intelligence (4). Construction of a working artificial intelligence system. Evaluation of capabilities of the system including impact of knowledge representation. Prerequisite: CS 171.

177 Applications of Probability in Computer Science (4). Application of probability to real-world problems in computer science. Typical topics include analysis of algorithms and graphs, probabilistic language models, network traffic modeling, data compression, and reliability modeling. Prerequisites: Mathematics 2A-B and Statistics 67/Mathematics 67; ICS 6D/Mathematics 6D; ICS 6B/Mathematics 6B; and either Mathematics 6G or 3A.

178 Machine Learning and Data Mining (4). Introduction to principles of machine learning and data mining applied to real-world datasets. Typical applications include spam filtering, object recognition, and credit scoring. Prerequisites: ICS 6D/Mathematics 6D, ICS 6B/Mathematics 6B, Mathematics 6G or 3A, Mathematics 2A-B, and Statistics 67/Mathematics 67.

179 Algorithms for Probabilistic and Deterministic Graphical Models (4). Graphical model techniques dealing with probabilistic and deterministic knowledge representations. Focuses on graphical models, such as constraint networks, Bayesian networks, and Markov networks that have become a central paradigm for knowledge representation and reasoning in artificial intelligence and general computer science. Prerequisites: ICS 23/CSE23; Mathematics 2A-B and Statistics 67/Mathematics 67.

183 Introduction to Computational Biology (4). The use of theories and methods based on computer science, mathematics, and physics in molecular biology and biochemistry. Basics in biomolecular modeling. Analysis of sequence and structural data of biomolecules. Analysis of biomolecular functions. Prerequisite: Mathematics 2D or 2J or 7 or Statistics 8. Same as Biological Sciences M123. Concurrent with Molecular Biology and Biochemistry 223.

184A Representations and Algorithms for Molecular Biology (4). Introduction to computational methods in molecular biology, aimed at those interested in learning about this interdisciplinary area. Covers computational approaches to understanding and predicting the structure, function, interactions, and evolution of DNA, RNA, proteins, and related molecules and processes. Prerequisite: Biological Sciences M123 or CS 183. Concurrent with CS 284A.

184B Probabilistic Modeling of Biological Data (4). A unified Bayesian probabilistic framework for modeling and mining biological data. Applications range from sequence (DNA, RNA, proteins) to gene expression data. Graphical models, Markov models, stochastic grammars, structure prediction, gene finding, evolution, DNA arrays, single- and multiple-gene analysis. Prerequisite: CS 184A. Concurrent with CS 284B.

184C Computational Systems Biology (4). Computational inference and modeling of gene regulation networks, signal transduction pathways, and the effects of regulatory networks in cellular processes, development, and disease. Introduction of required mathematical, computational, and data handling tools. Prerequisites: CS 184B. Concurrent with CS 284C.

189A-B-C Biomedical Computing Project I, II, III (3-3-3).
189A-B: Teaches problem definition and analysis, data representation, algorithm design, component integration, solution validation, and testability with teams of students specifying, designing, building, and testing a biomedical computing problem. Lectures include engineering values, discussions, and ethical ramifications of biomedical computing issues. Prerequisite: CS 184C.
189C: Completion, documentation, and presentation of projects started in CS 189A-B. Teaches writing and presentation skills. Students write comprehensive project reports individually. Each student participates in a public presentation of the project's results. Prerequisites: CS 189A-B and satisfactory completion of the lower-division writing requirement. CS 189A-B-C must be taken in the same academic year.

190 Special Topics in Information and Computer Science (4). May be repeated for credit if title or topic varies. Prerequisites vary.

H198 Honors Research (4). Directed independent research in computer science for honors students. Prerequisites: upper-division standing and satisfactory completion of the lower-division writing requirement; participation in the Bren School of ICS Honors Program or Campuswide Honors Program; consent of instructor.

199 Individual Study (2 to 5)

GRADUATE

201 Foundations of Cryptographic Protocols (4). Explores fundamental cryptographic tools, including encryption, signatures, and identification schemes. Students are introduced to the provable security paradigm of modern cryptography, focusing on understanding of security properties provided by cryptographic tools, and on proving security (or insecurity) of cryptographic constructions. Prerequisites: CS 260 or 263, or consent of instructor.

202 Applied Cryptography (4). Design and analysis of algorithms for applied cryptography. Topics include symmetric and asymmetric key encryption, digital signatures, one-way hash functions, digital certificates and credentials, and techniques for authorization, non-repudiation, authentication, identification, data integrity, proofs of knowledge, and access control. Prerequisites: CS 260 and 263, or consent of instructor.

203 Network and Distributed Systems Security (4). Overview of modern computer and networks security: attacks and countermeasures. Authentication, identification, data secrecy, data integrity, authorization, access control, computer viruses, network security. Group communication and multicast security techniques. Also covers secure e-commerce and applications of public key methods, digital certificates, and credentials. Prerequisite: CS 132 or EECS148. Same as Networked Systems 240.

206 Principles of Scientific Computing (4). Overview of widely used principles and methods of numerical and scientific computing, including basic concepts and computational methods in linear algebra, optimization, and probability. Prerequisites: basic courses in multivariate calculus, linear algebra, and probability. CS 206 and Statistics 230 may not both be taken for credit.

211A Visual Computing (4). Fundamentals of image processing (convolution, linear filters, spectral analysis), vision geometry (projective geometry, camera models and calibration, stereo reconstruction), radiometry (color, shading, illumination, BRDF), and visual content synthesis (graphics pipeline, texture- bump-, mip-mapping, hidden surface removal, anti-aliasing).

211B Advanced Topics in 3D Computer Graphics (4). Advanced topics in 3D graphics on rendering, geometric modeling, and visualization. Subjects range from illumination and shading, and multiresolution representations, to other advanced algorithms and data structures in graphics. Also looks at trends that go beyond traditional computer graphics. Prerequisites: CS 161, 164, or 211A, and 266.

212 Multimedia Systems and Applications (4). Organization and structure of modern multimedia systems; audio and video encoding/compression; quality of service concepts; scheduling algorithms for multimedia; resource management in distributed and multimedia systems; multimedia protocols over high-speed networks; synchronization schemes; multimedia applications and teleservices. Prerequisites: undergraduate degree in computer science or CS 143A and 161; CS 131, 132, and 133 recommended.

213 Introduction to Visual Perception (4). Introduction to the process of human visual perception. Offers the physiological and psychophysical approach to understand vision, introducing concepts of perception of color, depth, movement. Examples of the quantification and application of these models in computer vision, computer graphics, multimedia, HCI. Prerequisite: Mathematics 121A.

216 Image Understanding (4). The goal of image understanding is to extract useful semantic information from image data. Course covers low-level image and video processing techniques, feature descriptors, segmentation, objection recognition, and tracking. Prerequisites: ICS 6D/Mathematics 6D, Mathematics 6G or 3A, Mathematics 2A-B, ICS 23.

217 Light and Geometry in Computer Vision (4). Examines the issues of light transport and multiview geometry in computer vision. Applications include camera calibration, 3D understanding, stereo reconstruction, and illumination estimation. Prerequisites: ICS 6D/Mathematics 6D, Mathematics 6G or 3A, Mathematics 2A-B, ICS 23, CS 211A.

221 Information Retrieval, Filtering, and Classification (4). Algorithms for the storage, retrieval, filtering, and classification of textual and multimedia data. The vector space model, Boolean and probabilistic queries, and relevance feedback. Latent semantic indexing; collaborative filtering; and relationship to machine learning methods. Prerequisites: B.S. degree in computer science, or CS 161, 171; Mathematics 3A or 6G; and a course in basic probability.

222 Principles of Data Management (4). Covers fundamental principles underlying data management systems. Content includes key techniques including storage management, buffer management, record-oriented file system, access methods, query optimization, and query processing. Prerequisites: CS 122A 131, 143A, and 152.

223 Transaction Processing and Distributed Data Management (4). Covers fundamental principles underlying transaction processing including database consistency, concurrency control, database recovery, and fault-tolerance. Includes transaction processing in centralized, distributed, parallel, and client-server environments. Prerequisite: CS 222.

224 Advanced Topics in Data Management (4). Selected advanced topics in data management. Content differs in each offering and with instructor's interests. Intended for students interested in data management with focus on reading and critiquing recent research papers, presentations, and substantial research projects. Prerequisites: CS 143A, 152, 161, 222, 223, or consent of instructor.

225 Next Generation Search Systems (4). Discusses concepts and techniques related to all aspects of search systems. After considering basic search technology and the state-of-art systems, rapidly developing techniques for multimedia search, local search, event-search, and video-on-demand are explored. Prerequisites: ICS 21/CSE 21 or Informatics 41 or consent of instructor. Concurrent with CS 125.

230 Distributed Computer Systems (4). Principles of distributed computing systems. Topics covered include message-passing, remote procedure calls, distributed shared memory synchronization, resource and process/thread management, distributed file systems, naming and security. Prerequisite: consent of instructor.

232 Internet (4). A broad overview of basic Internet concepts. Internet architecture and protocols, including addressing, routing, TCP/IP, quality of service, and streaming. Prerequisite: EECS148, CS 132, or consent of instructor. Same as EECS248A and Networked Systems 201.

233 Networking Laboratory (4). A laboratory-based introduction to basic networking concepts such as addressing, sub-netting, bridging, ARP, and routing. Network simulation and design. Structured around weekly readings and laboratory assignments. Prerequisite: CS 132 or EECS148. Same as Networked Systems 202.

234 Advanced Networks (4). Design principles of networked systems, advanced routing and congestion control algorithms, network algorithms, network measurement, management, security, Internet economics, and emerging networks. Prerequisite: CS 232 or Networked Systems 201 or EECS248A. Same as Networked Systems 210.

235 Internet Technology (4). Application layer Internet protocols, potentially including client/server, WWW, file sharing, group communications, Internet programming. Prerequisite: CS 232. Same as Networked Systems 220.

236 Wireless and Mobile Networking (4). Introduction to wireless networking. The focus is on layers 2 and 3 of the OSI reference model, design, performance analysis, and protocols. Topics covered include: an introduction to wireless networking, digital cellular, next generation cellular, wireless LANs, and mobile IP. Prerequisites: CS 132 or EECS148, and an introductory course in probability or consent of instructor. Same as Networked Systems 230.

237 Middleware for Networked and Distributed Systems (4). Discusses concepts, techniques, and issues in developing distributed systems middleware that provides high performance and Quality of Service for emerging applications. Also covers existing standards (e.g., CORBA, DCOM, Jini, Espeak) and their relative advantages and shortcomings. Prerequisite: undergraduate-level course in operating systems and networks or consent of instructor. Same as Networked Systems 260.

239S Seminar in Parallel Distributed and Network Systems (2). Current research and research trends in parallel distributed and network systems. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

240 Language-Based Security (4). Teaches state-of-the art language-based techniques for increasing the security and reliability of software systems. Covers static (e.g., bytecode verification, proof-carrying code) and dynamic (e.g., reference monitors, stack inspection) techniques. Also discusses information flow and securing legacy code. Prerequisite: either CS 230, 242, or 262, or consent of instructor.

241 Advanced Compiler Construction (4). Advanced study of programming language implementation techniques: optimizations such as common sub-expression elimination, register allocation, and instruction scheduling. Implementation of language features such as type-directed dispatch, garbage collection, dynamic linking, and just-in-time code generation. Prerequisite: CS 142A or equivalent.

242 Parallel Computing (4). Definition of parallel processing systems. Theory and application of arrays, trees, and hypercubes. Computational models, applications: sorting, integer arithmetic, matrix operations, Fast Fourier Transform, and others. Interconnection networks: a framework for the description, analysis, and construction of hypercube-derived networks.

243 High-Performance Architectures and Their Compilers (4). Emphasis on the development of automatic tools (i.e., compilers/environments) for the efficient exploitation of parallel machines, and the trade-offs between hardware and software in the design of supercomputing and high-performance machines.

244 Introduction to Embedded and Ubiquitous Systems (4). Embedded and ubiquitous system technologies including processors, DSP, memory, and software. System interfacing basics; communication strategies; sensors and actuators, mobile and wireless technology. Using pre-designed hardware and software components. Design case studies in wireless, multimedia, and/or networking domains. Prerequisites: B.S. degree in computer science; or ICS 51, CS 152; Mathematics 3A or 6G or ICS 6D/Mathematics 6D; CS 161. Same as Informatics 244.

245 Software for Embedded Systems (4). Embedded computing elements, device interfaces, time-critical IO handling. Embedded software design under size, performance, and reliability constraints. Software timing and functional validation. Programming methods and compilation for embeddable software. Embedded runtime systems. Case studies of real-time software systems. Prerequisites: B.S. degree in computer science; or ICS 51, CS 152; Mathematics 3A or 6G or ICS 6D/Mathematics 6D; CS 161.

247 Design Automation and Prototyping of Embedded Systems (4). System representation and modeling. Abstract and language models. Simulation as a modeling activity. Computation and hw/sw systems prototypes. System analysis using models. Constraint and interface modeling. Behavioral compilation and synthesis. Prerequisites: B.S. degree in computer science or ICS 6D/Mathematics 6D, 51; CS 152, 161, 244; and Mathematics 3A or 6G.

248A Introduction to Ubiquitous Computing (4). The "disappearing computer" paradigm. Differences to the desktop computing model: applications, interaction in augmented environments, security, alternate media, small operating systems, sensors, and embedded systems design. Evaluation by project work and class participation. Same as Informatics 241.

248B Ubiquitous Computing and Interaction (4). Principles and design techniques for ubiquitous computing applications. Conceptual basis for tangible and embodied interaction. Interaction in virtual and augmented environments. Design methods and techniques. Design case studies. Examination by project work. Prerequisites: Informatics 231 and 241. Same as Informatics 242.

249S Seminar in Compilers and Operating Systems (2). Current research and research trends in system-level software such as compilers and operating systems. Forum for presentation and criticism by students of new published research and work in progress. Prerequisites: undergraduate degree in computer science or CS 142A and 143A. May be taken for credit four times.

250A Computer Systems Architecture (4). Study of architectural issues and their relation to technology and software: design of processor, interconnections, and memory hierarchies. Prerequisite: CS 152 or equivalent.

250B Modern Microprocessors (4). Fundamental concepts and recent advances in computer architecture necessary to understand and use modern microprocessors. Topics span out-of-order execution, multiple instruction issue, control/data speculation, predication, advanced cache and DRAM organizations, embedded systems, DSP and multi-media instructions. Prerequisite: CS 250A or equivalent.

252 Introduction to Computer Design (4). The methodology and use of CAD tools for computer design, accomplished by a lab in which students practice design using commercially available silicon compilers and other tools. Prerequisite: CS 151 and 152 or equivalent.

259S Seminar in Design Science (2). Current research and research trends in design science. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

260 Fundamentals of the Design and Analysis of Algorithms (4). Covers fundamental concepts in the design and analysis of algorithms and is geared toward non-specialists in theoretical computer science. Topics include: deterministic and randomized graph algorithms, fundamental algorithmic techniques like divide-and-conquer strategies and dynamic programming, and NP-completeness. Prerequisite: CS 161 or equivalent undergraduate algorithms course.

261 Data Structures (4). An in-depth treatment of data structures and their associated management algorithms including resource complexity analysis. Prerequisite: ICS 23 and CS 161.

262 Computational Complexity (4). Advanced course in computational models and complexity classes. Covers the fundamentals of Turing Machines, Decidability, and NP-completeness. Includes discussion of more advanced topics including polynomial hierarchy, randomized complexity classes, #P-completeness and hardness of approximation. Prerequisite: CS 162.

263 Analysis of Algorithms (4). Analysis of correctness and complexity of various efficient algorithms; discussion of problems for which no efficient solutions are known. Prerequisites: CS 161 and 261.

264 Quantum Computation and Information (4). Basic models for quantum computation and their foundations in quantum mechanics. Quantum complexity classes and quantum algorithms including algorithms for factoring and quantum simulation. Introduction to quantum information theory and quantum entanglement. Prerequisites: basic courses in linear algebra and algorithms.

265 Graph Algorithms (4). Graph definitions, representation methods, graph problems, algorithms, approximation methods, and applications. Prerequisites: CS 161 and 261.

267 Data Compression (4). An introduction to the theory and practice of modern data compression techniques. Topics include codes, coding, modeling, text compression, lossless and lossy image compression standards and systems, audio compression. Prerequisite: CS 161, 260, or 261.

268 Introduction to Optimization (4). A broad introduction to optimization. Unconstrained and constrained optimization. Equality and inequality constraints. Linear and integer programming. Stochastic dynamic programming. Prerequisites: Mathematics 2D, Mathematics 3A or 6G, Mathematics 67/Statistics 67. Concurrent with Computer Science 169.

269S Seminar in the Theory of Algorithms and Data Structures (2). Current research and research trends in the theory of algorithms and data structures. May be repeated for credit.

271 Introduction to Artificial Intelligence (4). The study of theories and computational models for systems which behave and act in an intelligent manner. Fundamental subdisciplines of artificial intelligence including knowledge representation, search, deduction, planning, probabilistic reasoning, natural language parsing and comprehension, knowledge-based systems, and learning.

273A Machine Learning (4). Computational approaches to learning algorithms for classifications, regression, and clustering. Emphasis is on discriminative classification methods such as decision trees, rules, nearest neighbor, linear models, and naive Bayes. Prerequisites: CS 206 and 271.

274A Probabilistic Learning: Theory and Algorithms (4). An introduction to probabilistic and statistical techniques for learning from data, including parameter estimation, density estimation, regression, classification, and mixture modeling. Prerequisite: CS 206 or consent of instructor.

275 Network-Based Reasoning/Constraint Networks (4). Study of the theory and techniques of constraint network model. Covers techniques for solving constraint satisfaction problems: backtracking techniques, consistency algorithms, and structure-based techniques. Tractable subclasses. Extensions into applications such as temporal reasoning, diagnosis, and scheduling. Prerequisite: a basic course in algorithm design and analysis, or consent of instructor.

276 Network-Based Reasoning/Belief Networks (4). Focuses on reasoning with uncertainty using "Bayes Networks" that encode knowledge as probabilistic relations between variables, and the main task is, given some observations, to update the degree of belief in each proposition. Prerequisite: a basic course in probability or consent of instructor.

277 Data Mining (4). Introduction to the general principles of inferring useful knowledge from large data sets (commonly known as data mining or knowledge discovery). Relevant concepts from statistics, databases and data structures, optimization, artificial intelligence, and visualization are discussed in an integrated manner. Prerequisite: CS 273A or 274A or consent of instructor.

278 Probability Models (4). Advanced probability, discrete time Markov chains, Poisson processes, continuous time Markov chains. Queuing or simulation as time permits. Prerequisite: Statistics 120A. Concurrent with Statistics 121.

279S Seminar in Artificial Intelligence (2). Current research and research trends in artificial intelligence. May be repeated for credit.

284A Representations and Algorithms for Molecular Biology (4). Introduction to computational methods in molecular biology, aimed at those interested in learning about this interdisciplinary area. Covers computational approaches to understanding and predicting the structure, function, interactions, and evolution of DNA, RNA, proteins, and related molecules and processes. Prerequisite: a basic course in algorithms, or a basic course in molecular biology, or consent of instructor. Concurrent with CS 184A.

284B Probabilistic Modeling of Biological Data (4). A unified Bayesian probabilistic framework for modeling and mining biological data. Applications range from sequence (DNA, RNA, proteins) to gene expression data. Graphical models, Markov models, stochastic grammars, structure prediction, gene finding, evolution, DNA arrays, single- and multiple-gene analysis. Prerequisite: a basic course in algorithms and molecular biology, or CS 284A or equivalent, or consent of instructor. Concurrent with CS 184B.

284C Computational Systems Biology (4). Computational inference and modeling of gene regulation networks, signal transduction pathways, and the effects of regulatory networks in cellular processes, development, and disease. Introduction of required mathematical, computational, and data handling tools. Prerequisites: CS 284A or 284B or Biological Sciences 99 and Mathematics 2D and 2J, or consent of instructor. Concurrent with CS 184C.

288A Biological Networks (4). Introduces the basics of primarily graph theoretic analysis and modeling of biological networks. Presents the necessary biological background for understanding different types of biological networks as well as mathematical, algorithmic, and computational complexity issues associated with them. Prerequisites: ICS 6D/Mathematics 6D and CS 161/CSE161 or equivalent, and Biological Sciences M123 or equivalent.

289S Seminar for Informatics in Biology and Medicine (2). Current research and research trends in bioinformatics and medical informatics. Forum for presentation and criticism by students of recently published research and work in progress. Prerequisite: CS 284A or 284B, or a basic understanding of bioinformatics or medical informatics. May be repeated for credit.

290 Research Seminar (2). Forum for presentation and criticism by students of research work in progress. Presentation of problem areas and related work. Specific goals and progress of research. Satisfactory/Unsatisfactory only.

295 Special Topics in Information and Computer Science (4).

298 Thesis Supervision (2 to 12). Individual research or investigation conducted in preparation for the M.S. thesis option or the dissertation requirements for the Ph.D. program.

299 Individual Study (2 to 12). Individual research or investigation under the direction of an individual faculty member.

DEPARTMENT OF INFORMATICS

5019 Donald Bren Hall; (949) 824-2901
David F. Redmiles, **Department Chair**

Faculty

Yunan Chen: Medical informatics, human-computer interaction
Paul Dourish: Human-computer interaction, computer-supported cooperative work
Stephen Franklin: Computer- and network-based educational technology, IT resource management
Daniel Frost: Artificial intelligence, software engineering, computer graphics, teaching of programming
Gillian Hayes: Interactive and collaborative technology, human-computer interaction, computer-supported cooperative work, educational technology, ubiquitous computing
James A. Jones: Software engineering, software testing and analysis, debugging and fault localization, static and dynamic analysis, software visualization
David G. Kay: Computer law, computer science education
Alfred Kobsa: User modeling, human-computer interaction, artificial intelligence, cognitive science, interdisciplinary computer science
Cristina Videira Lopes: Programming languages, acoustic communications, operating systems, software engineering
Gloria Mark: Computer-supported cooperative work, human-computer interaction
Melissa Mazmanian: Computer-mediated communication, organization studies, information and communication technologies in practice, social response to emerging technologies, work/non-work negotiations in the information age
Bonnie Nardi: Computer-supported collaborative work, human-computer interaction, computer-mediated communication, user studies methods, activity theory, cultural responses to technology development
Gary Olson: Interactive and collaborative technology, human-computer interaction, computer-supported cooperative work
Judy Olson: Interactive and collaborative technology, human-computer interaction, computer-supported cooperative work
Donald J. Patterson: Ubiquitous computing, pervasive computing, human-computer interaction, artificial intelligence, intelligent context for situated computing
Richard Pattis: Microworlds for teaching programming, debugging, computational tools for non-computer scientists
David F. Redmiles: Design environments, human-computer interaction, usability engineering, knowledge-based support
Debra J. Richardson: Software engineering; program testing; life-cycle validation; software environments
Susan E. Sim: Software engineering, research methodology, program comprehension
Thomas A. Standish: Software testing and analysis, software semantics and epistemology, programming and cognition, and software comprehension
Richard Taylor: Software engineering, user interfaces, environments, team support
Alex Thornton: Computer science education, programming languages, compilers
Bill Tomlinson: Environmental informatics, educational technology, computer graphics/visualization/digital arts
André van der Hoek: Software engineering
Hadar Ziv: Software testing, requirements engineering, Bayesian modeling

The faculty in the Department of Informatics also contribute to the following concentrations in the ICS graduate program: Software track, Interactive and Collaborative Technology track, and Ubiquitous Computing track.

Affiliated Faculty

Christopher Dobrian: Electronic music, composition
Magda El Zarki: Telecommunications, networks, wireless communication, video transmission
Tony Givargis: Embedded systems, platform-based system-on-a-chip design, low-power electronics
Vijay Gurbaxani: Economics of information systems management, impact of information technology on organization and market structure
K. H. (Kane) Kim: Distributed real-time computer systems, fault-tolerant computer systems, real-time learning systems
Kenneth L. Kraemer: Economics and management of computing; organizational and social impacts of computing; information technology and public policy; management information systems/decision support systems
Robert Nideffer: Electronic intermedia, interface theory and design, technology and culture, contemporary social theory
Simon Penny: Robotic sculpture, interactive environments, electronic media, art practice history, and critical theory
Alladi Venkatesh: Social impacts of information technology, Internet and the New Economy, Smart Home technologies, children and multimedia
Mark Warschauer: Language, literacy, technology

Informatics is the interdisciplinary study of the design, application, use, and impact of information technology. It goes beyond technical design, to focus on the relationship between information system design and use in real-world settings. These investigations lead to new forms of system architecture, new approaches to system design and development, new means of information system implementation and deployment, and new models of interaction between technology and social, cultural, and organizational settings.

Undergraduate Major in Informatics

Students in the Informatics major study software architecture; software development, design, and analysis; programming languages; ubiquitous computing; information retrieval and management; human-computer interaction; computer-supported cooperative work; and other topics that address the relationship between information technology design and use in social and organizational settings. The Informatics major addresses the broad set of issues surrounding design, ranging from initial requirements gathering to software design and measuring the impact of alternative solutions—all from a multidisciplinary perspective that includes computer science, information science, organizational science, social science, and cognitive science.

Courses offer extensive treatment of the conceptual underpinnings of the discipline and provide in-depth practical experiences, often performed on real-world examples and involving outside organizations. Students completing the major will be exceptionally well suited for advanced careers in information technology or for further study at the graduate level. Specific careers include, but are not limited to, software engineer; software architect; system, software, and information analyst; system, software, and information designer; project manager; and interface and interaction designer. Career choices include new start-ups, multinational corporations, small software houses, consulting, and game companies.

Informatics majors complete a specialization in one of three areas: software engineering, human-computer interaction, or organizations and information technology. Informatics majors may also choose to complete the Game Culture and Technology concentration, an interdisciplinary course of study requiring a total of eight courses (32 units) from the Bren School of ICS and Claire Trevor School of the Arts (Department of Studio Art); selection criteria and course requirements are described on page 344.

More information is available online at http://www.ics.uci.edu/informatics/ugrad.

ADMISSIONS

Freshmen Applicants: See pages 33–37.

Transfer Applicants:

Students transferring into the major must satisfy the following requirements:

1. Completion of one college-level mathematics course. Courses equivalent to ICS 6B/Mathematics 6B (Boolean Algebra and Logic), Statistics 7/Mathematics 7 (Basic Statistics) or Statistics 67/Mathematics 67 (Introduction to Probability and Statistics for Computer Science), and Philosophy 29 (Critical Reasoning) are preferred; these courses facilitate scheduling after transfer to UCI. A semester of pre-calculus is not sufficient to satisfy this requirement.
2. Completion of one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language.

*NOTE: Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree.

More information is available at http://www.ics.uci.edu/informatics/ugrad or at the ICS Student Affairs Office; telephone (949) 824-5156; e-mail: ucounsel@uci.edu.

REQUIREMENTS FOR THE B.S. DEGREE IN INFORMATICS

University Requirements: See pages 55–62.

Major Requirements

Lower-division:

A. Introductory courses: Informatics 41, 42, 43, 44.

B. ICS 23 or Informatics 45.

C. ICS 6B/Mathematics 6B, Statistics 7/Mathematics 7 or Statistics 67/Mathematics 67, and Philosophy 29.

Upper-division:

A. *Informatics Core Requirements:* Informatics 113, 121, 131, 151, 161, 191A-B-C.

B. *One of the following specializations:*

Software Engineering: Informatics 101, 102, 111, 115, 117, 122, 123, 133, Computer Science 122A, and one additional course chosen from Informatics 100–199, Computer Science 100–189, EECS118, Management 107, Management 159.

Human-Computer Interaction: Informatics 132; three courses chosen from Informatics 133, 141, 143, 153, 162, 171, Cognitive Science 143H; two project courses chosen from Informatics 125, 134, 148, 163; four additional courses chosen from Informatics 100–190 or Public Health 166.

Organizations and Information Technology: (a) Informatics 141, 162, 163, Management 5, Management 102; (b) four additional courses chosen from: Management 107, 159, 162, 170, 173, 175, and 178; Psychology and Social Behavior 9, 104S, 176S, and 180S; Sociology 41, 135, 141, 143, and 145; Informatics 100–199; (c) two additional courses chosen from Informatics 100–199 or Computer Science 100–199. NOTE: Informatics majors in the OIT specialization may not pursue a minor in Management.

Major and minor restrictions: See pages 342–343.

Sample Program of Study — Informatics: Software Engineering

FALL	WINTER	SPRING
Freshman		
Informatics 41	Informatics 42	Informatics 43
Writing 39A	Writing 39B	Writing 39C
Philosophy 29	ICS 6B/Math 6B	ICS 23 or Informatics 45
		Informatics 44
Sophomore		
Math/Statistics 7 or 67	Informatics 131	Informatics 115
Informatics 111	Gen. Ed. (IV)	CS 122A
Gen. Ed. (III)	Informatics 113	Informatics 101
Gen. Ed. (II)	Gen. Ed. (III)	Gen. Ed. (IV)
Junior		
Informatics 121	Informatics 122	Informatics 123
Informatics 161	Informatics 117	Informatics 102
Informatics 133	Informatics 151	UD Writing
Gen. Ed. (III)	Gen. Ed. (IV)	Informatics 191A
Senior		
Informatics 191B	Informatics 191C	Gen. Ed. (VIII)
Gen. Ed. (VI)	Software Eng. Elective	Elective
Elective	Gen. Ed. (VII)	Elective
	Elective	

Sample Program of Study — Informatics: Human-Computer Interaction (HCI)

FALL	WINTER	SPRING
Freshman		
Informatics 41	Informatics 42	Informatics 43
Writing 39A	Writing 39B	Writing 39C
Philosophy 29	ICS 6B/Math 6B	ICS 23 or Informatics 45
Sophomore		
Math/Statistics 7 or 67	Informatics 131	Informatics 132
Informatics 161	Informatics 113	HCI Elective
HCI Elective	HCI Elective	Gen. Ed. (III)
Gen. Ed. (II)	Gen. Ed. (III)	Gen. Ed. (IV)
Junior		
HCI Elective	Informatics 151	HCI Project
Informatics 121	HCI Elective	Gen. Ed. (IV)
Gen. Ed. (III)	HCI Project	UD Writing
Elective	Gen. Ed. (IV)	Informatics 191A
Senior		
Informatics 191B	Informatics 191C	Gen. Ed. (VIII)
HCI Elective	HCI Elective	Elective
Gen. Ed. (VI)	Gen. Ed. (VII)	Elective
Elective		

Sample Program of Study —
Informatics: Organizations and Information Technology (OIT)

FALL	WINTER	SPRING
Freshman		
Informatics 41	Informatics 42	Informatics 43
Writing 39A	Writing 39B	Writing 39C
Philosophy 29	ICS 6B/Math 6B	ICS 23 or Informatics 45
		Informatics 44
Sophomore		
Math/Statistics 7 or 67	Informatics 131	OIT Elective
Management 5	Management 102	OIT Elective
OIT Elective	Informatics 113	Gen. Ed. (III)
Gen. Ed. (II)	Gen. Ed. (III)	Gen. Ed. (IV)
Junior		
Informatics 161	Informatics 162W	Informatics 163
Informatics 121	Informatics 151	Gen. Ed. (IV)
Informatics 141	OIT Elective	OIT Elective
Gen. Ed. III	Gen. Ed. (IV)	Informatics 191A
Senior		
Informatics 191B	Informatics 191C	Gen. Ed. (VIII)
OIT Elective	Gen. Ed. (VII)	Elective
Gen. Ed. (VI)	Elective	Elective
Elective		

Minor in Digital Information Systems

Students outside the Bren School of ICS may pursue a minor in Digital Information Systems (DIS). The minor is designed for students who want to learn about information systems, computation, and digital communication without preparing to be computer programmers. Students completing the DIS minor will be able to understand the role of digital information systems in society, and will learn about the technological underpinnings of these systems and constraints on their design and use.

Requirements for the Minor: Two of ICS 3, ICS 4, ICS 5, ICS 6, ICS 8, ICS 11, ICS 22, ICS H22, Informatics 42; one of ICS 10, ICS 21, ICS H21, Informatics 41; four of ICS 105, Informatics 131, Informatics 143, Informatics 161, Informatics 162, Informatics 165, Informatics 171, ICS 139.

NOTE: Bren School of ICS majors may not minor in Digital Information Systems. Courses used to complete the minor in Digital Information Systems may not also count toward the requirements for the Information and Computer Science minor or the Informatics minor.

Minor in Informatics

The minor provides a focused study of Informatics to supplement a student's major program of study and prepares students for a profession, career, or academic pursuit in which information and software design is an integral part but is not the primary focus. The minor allows students sufficient flexibility to pursue courses that complement their major field or address specific interests. The minor particularly centers on understanding the relationships among computers and people, and how these relationships must be addressed in information and software design.

Requirements for the Minor: Informatics 41, 42, 43, 44, 131, and 161; and at least two additional upper-division courses in Informatics.

Before enrolling in any course for the Informatics minor, students should ensure that they meet its prerequisites. See the course prerequisites listed in the *Catalogue* or on the Informatics Web site at http://www.ics.uci.edu/informatics/ugrad.

NOTE: A maximum of two courses can be taken Pass/Not Pass to satisfy the minor in Informatics. Students majoring in Information and Computer Science, Computer Science, or Computer Science and Engineering cannot minor in Informatics. Students who are considering a major in Informatics must complete the Informatics courses with a letter grade.

Graduate Concentrations

For graduate concentrations in Informatics, see page 348.

Courses in Informatics

***(Schedule of Classes* designation: In4matx)**

Non-majors may also take lower-division Informatics courses to fulfill General Education requirements if they have met the prerequisites.

LOWER-DIVISION

41 Informatics Core Course I (6). Fundamental concepts of computer software design and construction. Data, algorithms, functions, and abstractions. Overview of computer systems: data representation, architectural components, operating systems, networks. Introduction to information systems: parties involved, architectural alternatives, usability, organizational and social concerns. May not be taken for credit after ICS 22/CSE22. **(II or V; IX)**

42 Informatics Core Course II (6). Alternative data structure implementations; analysis of time and space efficiency. Object-oriented programming concepts and techniques: classes, objects, inheritance, interfaces. Formal languages and automata. Problem modeling and design tradeoffs. Prerequisite: Informatics 41 with a grade of C or better. Only one course from Informatics 42, ICS 22/CSE22, or ICS H22 may be taken for credit. **(II or V)**

43 Informatics Core Course III (6). Concepts, methods, and current practice of software engineering. Large-scale software production, software life cycle models, principles and techniques for each stage of development. Laboratory project applying these concepts. Prerequisite: Informatics 42 with a grade of C or better. Only one course from Informatics 43, ICS 52, and ICS 105 may be taken for credit.

44 Seminar in Informatics Research Topics (2). Introduction to current research topics in Informatics. Various faculty members present current research and relate it to the course content of the Informatics degree program.

45 Patterns of Software Construction (4). Building software applications; reusing and integrating components; designing for reuse. Effective use of libraries and APIs, file and network I/O, creation of user interfaces. Prerequisite: Informatics 42 or ICS 22/CSE22 or ICS H22 with a grade of C or better. **(V)**

UPPER-DIVISION

101 *Concepts in* Programming Languages I (4). In-depth study of several contemporary programming languages stressing variety in data structures, operations, notation, and control. Examination of different programming paradigms; such as logic programming, functional programming and object-oriented programming; implementation strategies, programming environments, and programming style. Prerequisites: Informatics 42 or ICS 51 or CSE31/EECS31 with a grade of C or better, and Informatics 45 or ICS23/CSE23 with a grade of C or better. Same as CS 141/CSE141.

102 Concepts of Programming Languages II (4). In-depth study of major programming paradigms: imperative, functional, declarative, object-oriented, and aspect-oriented. Understanding the role of programming languages in software development and the suitability of languages in context. Domain-specific languages. Designing new languages for better software development support. Prerequisite: Informatics 101/CS 141/CSE141 with a grade of C or better.

111 Software Tools and Methods (4). Concepts and techniques of constructing software in a systematic fashion, including detailed design techniques, specifications, programming methods, quality-inducing procedures, development tools, team techniques, testing, estimation, and performance improvement. Laboratory work involves exercises to illustrate important concepts, methods, and tools. Prerequisite: Informatics 43 or ICS 52 or CSE90 with a grade of C or better. Same as CSE121.

113 Requirements Analysis and Engineering (4). Aims to equip students to develop techniques of software-intensive systems through successful requirements analysis techniques and requirements engineering. Students learn systematic process of developing requirements through cooperative problem analysis, representation, and validation. Prerequisite: Informatics 43 or ICS 52 with a grade of C or better. Recommended: Philosophy 29.

115 Software Testing, Analysis, and Quality Assurance (4). Aims to prepare students to develop high-quality software through successful verification and validation techniques. Fundamental principles of software testing, how to test software, and how to ensure the thoroughness of testing to gain confidence in the correctness of the software. Prerequisites: ICS 6B/Mathematics 6B with a grade of C or better, and either Informatics 43 or ICS 52 with a grade of C or better. Recommended: Philosophy 29.

117 Project in Software System Design (4). Specification, design, construction, testing, and documentation of a complete software system. Special emphasis on the need for and use of teamwork, careful planning, and other techniques for working with large systems. Prerequisites: Informatics 43 or ICS 52, and upper-division standing.

119 Advanced Project in Software Engineering (4). Students work in teams to specify, design, construct, test, and document a complete software system in a specialized application domain using application/domain-specific techniques. Each offering's topic is announced the preceding spring. Prerequisite: Informatics 117 with a grade of C or better.

121 Software Design I (4). Introduction to application design: designing the overall functionality of a software application. Topics include general design theory, software design theory, and software architecture. Includes practice in designing and case studies of existing designs. Prerequisite: Informatics 113 with a grade of C or better.

122 Software Design II (4). Introduction to implementation design: designing the internals of a software application. Topics include design aesthetics, design implementation, design recovery, design patterns, and component reuse. Includes practice in designing and case studies of existing designs. Prerequisites: Informatics 121 or Informatics 101/CS 141/CSE141.

123 Software Architectures, Distributed Systems, and Interoperability (4). Prepares students to engineer well-structured software systems. Students learn a wide range of software architectural styles, architectural platforms that provide standard services to applications, and formal architecture description languages. Prerequisites: Informatics 122 or the following: Informatics 101/CS 141/CSE141 and Informatics 111/CSE121.

125 Computer Game Development (4). Introduction to the principles of interactive two- and three-dimensional computer game development. Concepts in computer graphics, algorithms, software engineering, art and graphics, music and sound, story analysis, and artificial intelligence are presented and are the basis for student work. Prerequisite: either CS 112, CS 171, Informatics 121, Studio Art 135, or consent of instructor. Same as CS 113.

131 Human Computer Interaction (4). Presents basic principles of human-computer interaction (HCI). Introduces students to user interface design techniques, design guidelines, and usability testing. Students gain the ability to design and evaluate user interfaces and become familiar with some of the outstanding research problems in HCI. Prerequisite: one course (with a grade of C or better) selected from Informatics 41, ICS 10A, ICS 21/CSE21, ICS H21, Engineering ENGR10, EECS10, MAE10, or equivalent.

132 Project in Human-Computer Interaction Requirements and Evaluation (4). Students undertake significant projects in the elicitation and specification of HCI requirements and the thorough evaluation of user interfaces. Prerequisite: Informatics 131.

133 User Interaction Software (4). Introduction to human-computer interaction programming. Emphasis on current tools, standards, methodologies for implementing effective interaction designs. Widget toolkits, Web interface programming, geo-spatial and map interfaces, mobile phone interfaces. Strategies for evaluation of user interfaces. Prerequisite: Informatics 45 or ICS 23/CSE23.

134 Project in User Interaction Software (4). Students complete an end-to-end user interface programming project based on an iterative design paradigm. Topics may include requirements brainstorming, paper prototyping, iterative development, cognitive walk-through, quantitative evaluation, and acceptance testing. Prerequisites: Informatics 131 and 133.

141 Information Retrieval (4). An introduction to information retrieval including indexing, retrieval, classifying, and clustering text and multimedia documents. Prerequisites: ICS 23/CSE23/ICS H23 or Informatics 43; Statistics 7/Mathematics 7 or Statistics 67/Mathematics 67. Same as CS 121.

143 Information Visualization (4). Introduction to interactive visual interfaces for large datasets, and to principles of human visual perception and human computer interaction that inform their design. Various applications for data analysis and monitoring are discussed. Prerequisite: Informatics 131 or Informatics 43 or ICS 52.

148 Project in Ubiquitous Computing (4). Introduction to ubiquitous computing research methods, tools, and techniques. Prototyping, design, and evaluation of physical computing applications, smart environments, embedded systems, and future computing scenarios. Includes hands-on in-class laboratory exercises. Prerequisite: Informatics 45 or ICS 23/CSE23.

151 Project Management (4). Introduces theoretical and practical aspects of project management. Topics include organizational theory, group behavior, project management skills, case studies, personal and group productivity tools, management of distributed work, stakeholders, consultants, and knowledge management. Students do a project exercise. Prerequisites: Informatics 43 or ICS 52 with a grade of C or better and Informatics 161.

153 Computer-Supported Cooperative Work (4). Introduces concepts and principles of collaborative systems. Topics may include shared workspaces, group interaction, workflow, architectures, interaction between social and technical features of group work, and examples of collaborative systems used in real-world settings. Students develop a simple collaborative application. Prerequisites: Informatics 43 or ICS 52 with a grade of C or better; or Informatics 161.

161 Social Analysis of Computerization (4). Introduction of computerization as a social process. Examines the social opportunities and problems raised by new information technologies, and the consequences of different ways of organizing. Topics include computerization and work life, privacy, virtual communities, productivity paradox, systems risks. Prerequisite: one course (with a grade of C or better) selected from Informatics 41, ICS 10A, ICS21/CSE21, ENGR10, CEE10, EECS10, MAE10, or equivalent; satisfactory completion of the lower-division writing requirement.

162 Organizational Information Systems (4). Introduction to role of information systems in organizations, components and structure of organizational information systems, and techniques used in information systems analysis, design, and implementation. Prerequisites: Informatics 161 and satisfactory completion of the lower-division writing requirement.

163 Project in the Social and Organizational Impacts of Computing (4). Students undertake projects intended to gather and analyze data from situations in which computers are used, organize and conduct experiments intended to test hypotheses about impacts, and explore the application of concepts learned in previous courses. Prerequisite: Informatics 162 .

165 Technology and Literacy (4). Examines relationships of new digital media to literacy in home and school environments. Topics include blogs, wikis, fan fiction, social network sites, online research, video games, instant messaging, e-mail, digital imagery, and multimedia production in connection with learning and literacy. Same as Education 139.

171 Introduction to Medical Informatics (4). Broad overview of medical informatics for students with varied backgrounds. Electronic medical records, online resources, mobile technologies, patient safety and computational design. Legal, ethical, and public policy issues. Health systems management. Evaluation and fieldwork for health systems. Prerequisite: one course (with a grade of C or better) selected from Informatics 41, ICS 10A, ICS21/CSE21, ENGR10, CEE10, EECS10, MAE10, or equivalent.

190 Special Topics in Informatics (4). May be repeated for credit if title or topic varies. Prerequisites vary.

191A-B-C Senior Design Project (4-4-4). Group supervised project in which students analyze, specify, design, construct, evaluate, and adapt a significant information processing system. Topics include team management, professional ethics, and systems analysis. Prerequisites for 191A: Informatics 121, 131, 151, 161, and upper-division standing; for 191B: Informatics 191A; for 191C: Informatics 191B. In-progress grading for 191B only.

H198 Honors Research (4). Directed independent research in Informatics for honors students. Prerequisites: satisfactory completion of the lower-division writing requirement; participation in the Bren School of ICS Honors Program or the Campuswide Honors Program.

199 Individual Study (2 to 5)

GRADUATE

200A-B Informatics Graduate Core (4-4). Integrated survey of core topics and techniques in Informatics and exemplary applications thereof. Primary focus on human-computer interaction, software engineering, and research methods for Informatics. Lecture and readings in classical and contemporary research. Prerequisite: graduate standing in the School of ICS.

201 Research Methodology for Informatics (4). Introduction to strategies and idioms of research in Informatics. Includes examination of issues in scientific inquiry, qualitative and quantitative methods, and research design. Both classic texts and contemporary research literature are read and analyzed.

203 Qualitative Research Methods in Information Systems (4). Introduction to qualitative research methods used to study computerization and information systems, such as open-ended interviewing, participant observation, and ethnography. Studies of the methods in practice through examination of research literature. Prerequisite: Informatics 251 or 261.

205 Quantitative Research Methods in Information Systems (4). Quantitative research methods used to study computerization and information systems. Design of instruments, sampling, sample sizes, and data analysis. Validity and reliability. Longitudinal versus cross-sectional designs. Analysis of secondary data. Studies of the methods through examination of research literature. Prerequisites: basic knowledge of elementary statistics; Informatics 251 or 261.

208S Seminar in Informatics Research (2). Current research and research trends in any of the areas of Informatics. Speakers from UCI and elsewhere. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

209S Seminar in Informatics (3). Current research and research trends in Informatics. Forum for presentation and criticism by students of research work in progress. May be repeated for credit as topics vary.

211 Software Engineering (4). Study of the concepts, methods, and tools for the analysis, design, construction, and measurement of complex software-intensive systems. Underlying principles emphasized. State-of-the-art software engineering and promising research areas covered, including project management.

212 Analysis of Programming Languages (4). Concepts in modern programming languages, their interaction, and the relationship between programming languages and methods for large-scale, extensible software development. Empirical analysis of programming language usage.

213 Formal Specification and Modeling (4). Examination of formal specification and modeling techniques, including algebraic, scenario-based, model-based, state-based, temporal and other logics, along with their related uses in software development.

215 Software Analysis and Testing (4). Studies techniques for developing confidence in software from traditional testing schemes to integrated, multi-technique analytic approaches. Considers strengths and weaknesses and explores opportunities for synergistic technique application. Emphasis is on approaches integrated into the software process.

217 Software Processes (4). Explores vehicles for modeling, coding, and analyzing software processes. Considers integration of software process programming approaches with traditional management issues. Explores the use of software process execution as a vehicle for effective integration of tools into environments.

219 Software Environments (4). Study of the requirements, concepts, and architectures of comprehensive, integrated, software development and maintenance environments. Major topics include process support, object management, communication, interoperability, measurement, analysis, and user interfaces in the environment context.

221 Software Architecture (4). Study of the concepts, representation techniques, development methods, and tools for architecture-centric software engineering. Topics include domain-specific software architectures, architectural styles, architecture description languages, software connectors, and dynamism in architectures.

223 Applied Software Design Techniques (4). Study of concepts, representations, techniques, and case studies in structuring software systems, with an emphasis on design considerations. Topics include static and dynamic system structure, data models, abstractions, naming, protocols and application programmer interfaces.

231 User Interface Design and Evaluation (4). Introduction to the design and evaluation of user interfaces, with an emphasis on methodology. Cognitive principles, design life cycle, on-line and off-line prototyping techniques. Toolkits and architectures for interactive systems. Evaluation techniques, including heuristic and laboratory methods.

232 Research in Human-Computer Interaction (4). Introduction to contemporary topics in human-computer interaction, including methods, technologies, design, and evaluation. Emerging application domains and their challenges to traditional research methods. Advanced architectures and technologies. Critical issues. Some familiarity with HCI principles expected.

233 Knowledge-Based User Interfaces (4). Concepts related to the development of interactive software systems with a focus on knowledge-based tools and human-centered design. Topics span the fields of human-computer interaction, software engineering, and knowledge representation. Prerequisite: CS 171 or equivalent.

235 Advanced User Interface Architecture (4). Architectural concerns in advanced interactive systems. The design of current and emerging platforms for novel interactive systems. Paradigms such as constraint-based programming, multimodal interaction, and perceptual user interfaces for individual, distributed, and ubiquitous applications.

241 Introduction to Ubiquitous Computing (4). The "disappearing computer" paradigm. Differences to the desktop computing model: applications, interaction in augmented environments, security, alternate media, small operating systems, sensors, and embedded systems design. Evaluation by project work and class participation. Same as CS 248A.

242 Ubiquitous Computing and Interaction (4). Principles and design techniques for ubiquitous computing applications. Conceptual basis for tangible and embodied interaction. Interaction in virtual and augmented environments. Design methods and techniques. Design case studies. Examination by project work. Prerequisites: Informatics 231 and 241. Same as CS 248B.

244 Introduction to Embedded and Ubiquitous Systems (4). Embedded and ubiquitous system technologies including processors, DSP, memory, and software. System interfacing basics; communication strategies; sensors and actuators, mobile and wireless technology. Using pre-designed hardware and software components. Design case studies in wireless, multimedia, and/or networking domains. Prerequisites: B.S. degree in computer science; or ICS 51, CS 152; Mathematics 3A or 6G or ICS 6D/Mathematics 6D; CS 161. Same as CS 244.

251 Computer-Supported Cooperative Work (4). The role of information systems in supporting work in groups and organizations. Examines various technologies designed to support communication, information sharing, and coordination. Focuses on behavioral and social aspects of designing and using group support technologies.

261 Social Analysis of Computing (4). The social and economic impacts of computing and information technologies on groups, organizations, and society. Topics include computerization and changes in the character of work, social control and privacy, electronic communities, and risks of safety-critical systems to people.

263 Computerization, Work, and Organizations (4). Selected topics in the influence of computerization and information systems in transforming work and organizations. Theories of organization and organizational change. Processes by which diverse information technologies influence changes in work and organizations over short and long time periods. Prerequisite: Informatics 251 or 261.

267 Computing and Cyberspace (4). Selected topics in Internet-level computerization and systems, including electronic communities, distributed information services, electronic commerce, and digital libraries. Surveys systems and architectures. Theories of social interaction, computer-mediated communication, and social-technical system design. Examines social studies of cyberspace use and impacts. Prerequisite: Informatics 251 or 261.

269 Computer Law (4). The American legal system and its provisions affecting computer systems, computer networks, and information processing. Intellectual property, contracts, privacy, liability for malfunction, computer crime, constitutional issues, transborder data flow, computer-based evidence, and litigation. Prerequisite: graduate standing or consent of instructor.

290 Research Seminar (2). Forum for presentation and criticism by students of research work in progress. Presentation of problem areas and related work. Specific goals and progress of research. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

291S Literature Survey in Software Engineering (2). Reading and analysis of relevant literature in Software Engineering under the direction of a faculty member. May be repeated for credit as topics vary.

295 Special Topics in Informatics (4). May be repeated for credit as topics vary.

298 Thesis Supervision (2 to 12). Individual research or investigation conducted in preparation for the M.S. thesis option or the dissertation requirements for the Ph.D. program.

299 Individual Study (2 to 12). Individual research or investigation under the direction of an individual faculty member.

DEPARTMENT OF STATISTICS

2019 Donald Bren Hall; (949) 824-5392: Fax: (949) 824-9863
stat@uci.edu; http://www.stat.uci.edu/

Faculty

Daniel L. Gillen: Biostatistics, survival analysis and longitudinal methods, group sequential methods, design and analysis of clinical trials, applications to biological and clinical studies

Wesley O. Johnson: Bayesian semi-parametric inference, survival analysis, prediction, specification of priors, applications in epidemiology, diagnostic testing, longitudinal and mixed modeling, asymptotics

Babak Shahbaba: Biostatistics, Bayesian methodology, statistical machine learning, and applying novel statistical methods to solve research questions in genetics, proteomics, and cancer studies

Hal S. Stern: Bayesian methodology, hierarchical modeling, model checking/model diagnostics, statistical applications in the biological and social sciences, statistics and sports

Jessica Utts: Statistical education and literacy; statistical applications to parapsychology, medicine, epidemiology, and transportation

David van Dyk: Statistical computation, Bayesian methodology, hierarchical modeling, causal inference, and application in astronomy and the physical and social sciences

Yaming Yu: Statistical computation, Bayesian methodology, and missing data problems

Zhaoxia Yu: Statistical genetics, genomics, and bioinformatics

Statistics is the science concerned with developing and studying methods for collecting, analyzing, interpreting, and presenting empirical data. Statistical principles and methods are important for addressing questions in public policy, medicine, industry, and virtually every branch of science. Interest in statistical methods has increased dramatically with the abundance of large databases in fields like computer science (Internet and Web traffic), business and marketing (transaction records), and biology (the human genome and related data). It is the substantive questions in such areas of application that drive the development of new statistical methods and motivate the mathematical study of the properties of these methods.

Undergraduate Program in Statistics

The Department of Statistics offers lower-division undergraduate courses designed to introduce students to the field of statistics (Statistics 7/Mathematics 7, Statistics 8, 67) and upper-division undergraduate courses on the theoretical foundations of probability and statistics (Statistics 120A-B-C, 121) and statistical methodology (Statistics 110-111-112). The Department is in the process of planning an undergraduate degree program in Statistics. In the interim, students interested in focusing on statistics are encouraged to consider a minor in Statistics along with a major in a field of interest.

MINOR IN STATISTICS

The minor in Statistics is designed to provide students with exposure to both statistical theory and practice. The minor requires a total of seven courses. These include a mathematics course, five core statistics courses, and an elective that may be taken from among several departments. Some of the courses used to complete the minor may include prerequisites that may or may not be part of a student's course requirements for their major. Because of this the minor is somewhat intensive, but it is a useful complement to a variety of undergraduate fields for mathematically inclined students. The minor, supplemented with a few additional courses (mathematics and computing), would provide sufficient background for graduate study in statistics. Students considering a minor in Statistics should meet with the Director of Undergraduate Studies in Statistics as early as possible to plan their course work.

NOTE: Students may not receive both a minor in Statistics and a specialization in Statistics within the Mathematics major.

Requirements for the Minor

Six required courses: Mathematics 3A, Statistics 120A-B-C, Statistics 110-111.

One elective course: Students select one course from the following list, or can substitute another with approval of the Director of Undergraduate Studies: Statistics 7/Mathematics 7 or equivalent course (but only if taken prior to Statistics 110); Statistics 112; Statistics 121; Mathematics 105A or 105B; Mathematics 130B or 130C; Mathematics 132B or 132C; ICS 21.

Graduate Program in Statistics

Research in statistics can range from mathematical studies of the theoretical underpinnings of a statistical model or method to the development of novel statistical models and methods and a thorough study of their properties. Frequently, statistics research is motivated and informed by collaborations with experts in a particular substantive field. Their scientific studies and data collection efforts may yield complex data that cannot be adequately handled using standard statistical methodology. Statisticians aim to develop methods that address the scientific or policy questions of the researcher. In doing so, statisticians must consider how efficiently and effectively the proposed methodology can be implemented and what guarantees can be provided as to the performance of the proposed methods. Such questions can often be answered using a combination of mathematical, analytical, and computational techniques.

Background: Individuals from a variety of backgrounds can make significant contributions to the field of statistics as long as they have sufficient background in statistics, mathematics, and computing. Undergraduate preparation in statistics, mathematics, and computing should include multivariate calculus (the equivalent of UCI courses Mathematics 2A-B, 2D-E), linear algebra (121A), elementary analysis (140A-B), introductory probability and statistics (Statistics 120A-B-C), and basic computing (ICS 21). For students with undergraduate majors outside of mathematics and statistics, it is possible to make up one or two missing courses during the first year in the program.

Students may be admitted to either the master's program or the doctoral program. See page 347 for additional information about the Bren School of ICS's graduate programs and general information about admissions.

MASTER OF SCIENCE IN STATISTICS

Statistics Course Requirements: Intermediate Probability and Statistics (Statistics 200A-B-C); Statistical Methodology (Statistics 210, 211, 212); six other graduate courses in or related to statistics, at least three of which are offered by the Department of Statistics.

The entire program of courses must be approved by the Statistics Department Graduate Committee. Students with previous graduate training in statistics may petition the Committee to substitute other courses for a subset of the required courses. Students are required to pass a written comprehensive examination ordinarily at the end of the first year, covering the material from Statistics 200A-B-C, 210, 211, and 212.

DOCTOR OF PHILOSOPHY IN STATISTICS

Statistics Course Requirements: Intermediate Probability and Statistics (Statistics 200A-B-C); Statistical Methodology (Statistics 210, 211, 212); Advanced Probability and Statistics Topics (Statistics 220A-B); Bayesian Statistical Analysis (Statistics 225); Statistical Computing Methods (Statistics 230); five other graduate courses in or related to statistics, at least two of which are offered by the Department of Statistics.

Additional Ph.D. requirements:

Each Ph.D. student is required to take a written comprehensive examination, ordinarily at the end of the first year, covering the material from Statistics 200A-B-C, 210, 211, and 212. In addition, each student is required to take a written comprehensive examination after completion of the second year course work, covering material from Statistics 220A-B, 225, and 230.

Ph.D. students who have passed the written comprehensive examinations are required to give a post-comprehensive research presentation each year.

Ph.D. students are required to serve as teaching assistants for at least two quarters.

Ph.D. students are required to demonstrate substantive knowledge of an application area outside of statistics (e.g., computer science, economics, cognitive sciences, biology, or medicine). Such knowledge can be demonstrated by course work in the application area (three quarter courses), co-authorship of publishable research in the application area, or other evidence of supervised collaborative work that is substantiated by an expert in the field. In the case of a theoretically oriented student, the outside application area may be mathematics.

The normative time for advancement to candidacy is three years. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

MASTER OF SCIENCE IN STATISTICS FOR STUDENTS ENROLLED IN A DOCTORAL PROGRAM AT UCI

Students who are currently enrolled in a doctoral program at UCI and wish to pursue a Master of Science degree in Statistics at the same time should consult with the Director of Graduate Studies in Statistics to register their interest with the Department, to develop a program of study, and to establish a relationship with a faculty advisor in Statistics. The degree requirements including the comprehensive examination are the same as those listed under the Master of Science in Statistics. The Statistics Department Graduate Committee must be petitioned for permission to sit for the comprehensive examination. The petition should include the proposed plan of study and a current official UCI transcript. A petition for the degree must be filed with the Statistics Department Graduate Committee for approval two quarters before the degree is awarded.

Courses in Statistics

(Schedule of Classes **designation: Stats)**

LOWER-DIVISION

7 Basic Statistics (4). Lecture, three hours; discussion, one to two hours. Introduces basic inferential statistics including confidence intervals and hypothesis testing on means and proportions, t-distribution, Chi Square, regression and correlation. F-distribution and nonparametric statistics included if time permits. Same as Mathematics 7. Only one course from Statistics 7/Mathematics 7, Statistics 8, Management 7, or Biological Sciences 7 may be taken for credit. No credit for Statistics 7/Mathematics 7 if taken after Statistics 67/Mathematics 67. **(V)**

8 Introduction to Biological Statistics (4). Lecture, three hours; discussion, one hour. Teaches introductory statistical techniques used to collect and analyze experimental and observational data from health sciences and molecular, cellular, environmental, and evolutionary biology. Specific topics include exploration of data, probability and sampling distributions, basic statistical inference for means, proportions, linear regression, and analysis of variance. Only one course from Statistics 8, Statistics 7/Mathematics 7, Management 7, Biological Sciences 7, or Social Ecology 13 may be taken for credit. **(V)**

67 Introduction to Probability and Statistics for Computer Science (4). Lecture, three hours; discussion, two hours. Introduction to the basic concepts of probability and statistics with discussion of applications to computer science. Prerequisites: Mathematics 2B and Mathematics 6D/ICS 6D. No credit for Statistics 7/Mathematics 7 or Management 7 if taken after Statistics 67/Mathematics 67. Same as Mathematics 67. **(V)**

UPPER-DIVISION

110 Statistical Methods for Data Analysis I (4). Lecture, three hours; laboratory, one hour. Introduction to statistical methods for analyzing data from experiments and surveys. Methods covered include two-sample procedures, analysis of variance, simple and multiple linear regression. Prerequisite: Statistics 7, or 120A-B-C, or knowledge of basic statistics. Concurrent with Statistics 201.

111 Statistical Methods for Data Analysis II (4). Lecture, three hours; laboratory, one hour. Introduction to statistical methods for analyzing data from surveys or experiments. Emphasizes application and understanding of methods for categorical data including contingency tables, logistic and Poisson regression, loglinear models. Prerequisite: Statistics 110 or equivalent. Concurrent with Statistics 202.

112 Statistical Methods for Data Analysis III (4). Lecture, three hours; laboratory, one hour. Introduction to statistical methods for analyzing longitudinal data from experiments and cohort studies. Topics covered include survival methods for censored time-to-event data, linear mixed models, non-linear mixed effects models, and generalized estimating equations. Prerequisite: Statistics 111 or equivalent. Concurrent with Statistics 203.

120A-B-C Introduction to Probability and Statistics (4-4-4). Lecture, three hours; discussion, one to two hours. Introductory course covering basic principles of probability and statistical inference. **120A:** Axiomatic definition of probability, random variables, probability distributions, expectation. **120B:** Point estimation, interval estimating, and testing hypotheses, Bayesian approaches to inference. **120C:** Linear regression, analysis of variance, model checking. Prerequisites: for 120A-B: Mathematics 2A-B; 2D and 2J or 4; for 120C: Statistics 120A-B; Mathematics 3A or 6G. Same as Mathematics 131A-B-C. Only one course from Statistics 120A, Mathematics 130A, and Mathematics 132A may be taken for credit.

121 Probability Models (4). Advanced probability, discrete time Markov chains, Poisson processes, continuous time Markov chains. Queuing or simulation as time permits. Prerequisite: Statistics 120A. Concurrent with Computer Science 278.

199 Individual Study (2 to 5). Individual research or investigations under the direction of an individual faculty member. Prerequisite: consent of instructor.

GRADUATE

200A-B-C Intermediate Probability and Statistical Theory (4-4-4). 200A: Basics of probability theory, random variables and basic transformations, univariate distributions—discrete and continuous, multivariate distributions. **200B:** Random samples, transformations, limit laws, normal distribution theory, introduction to stochastic processes, data reduction, point estimation (maximum likelihood). **200C:** Interval estimation, hypothesis testing, decision theory and Bayesian inference, basic linear model theory. Prerequisites: Statistics 120A-B-C or equivalent or consent of instructor.

201 Statistical Methods for Data Analysis I (4). Introduction to statistical methods for analyzing data from experiments and surveys. Methods covered include two-sample procedures, analysis of variance, simple and multiple linear regression. May not be taken for graduate credit by Statistics graduate students. Prerequisite: knowledge of basic statistics (at level of Statistics 7). Concurrent with Statistics 110.

202 Statistical Methods for Data Analysis II (4). Introduction to statistical methods for analyzing data from surveys or experiments. Emphasizes application and understanding of methods for categorical data including contingency tables, logistic and Poisson regression, loglinear models. May not be taken for graduate credit by Statistics graduate students. Prerequisite: Statistics 201 or equivalent. Concurrent with Statistics 111.

203 Statistical Methods for Data Analysis III (4). Introduction to statistical methods for analyzing longitudinal data from experiments and cohort studies. Topics covered include survival methods for censored time-to-event data, linear mixed models, non-linear mixed effects models, and generalized estimating equations. May not be taken for graduate credit by Statistics graduate students. Prerequisite: Statistics 202 or equivalent. Concurrent with Statistics 112.

210 Statistical Methods I: Linear Models (4). Statistical methods for analyzing data from surveys and experiments. Topics include randomization and model-based inference, two-sample methods, analysis of variance, linear regression and model diagnostics. Prerequisite: knowledge of basic statistics (at the level of Statistics 7), calculus, linear algebra.

211 Statistical Methods II: Regression Modeling Strategies (4). Introduction to non-linear regression methods for addressing scientific questions. Emphasizes strategies for appropriately selecting and implementing regression models for addressing questions that arise in multiple scientific areas including economics, public health, sociology, and biology. Prerequisite: Statistics 210 or equivalent.

212 Statistical Methods III: Generalized Linear Models (4). Development of the theory and application of generalized linear models. Topics covered include likelihood estimation and asymptotic distributional theory for exponential families and quasi-likelihood. Focuses on theoretical development and application of methodology for analyzing non-normal outcomes. Prerequisite: Statistics 211 or equivalent.

220A-B Advanced Probability and Statistics Topics (4-4). Advanced topics in probability and statistical inference including measure theoretic probability, large sample theory, decision theory, resampling and Monte Carlo methods, nonparametric methods. Prerequisites: Statistics 200A-B-C.

225 Bayesian Statistical Analysis (4). Introduction to the Bayesian approach to statistical inference. Topics include univariate and multivariate models, choice of prior distributions, hierarchical models, computation including Markov chain Monte Carlo, model checking, and model selection. Prerequisites: two quarters of upper-division or graduate training in probability and statistics, or consent of instructor.

230 Statistical Computing Methods (4). Numerical computations and algorithms with applications in statistics. Topics include optimization methods including the EM algorithm, random number generation and simulation, Markov chain simulation tools, and numerical integration. Prerequisites: two quarters of upper-division or graduate training in probability and statistics. Statistics 230 and CS 206 may not both be taken for credit.

235 Modern Data Analysis Methods (4). Introduces a variety of modern tools for data analysis. Emphasizes use of computational and resampling techniques for data analyses wherein the data do not conform to standard toolbox of regression models and/or complexity of modeling problem threatens validity of standard methods. Prerequisite: graduate standing in Statistics or Statistics 120C, or equivalent.

240 Multivariate Statistical Methods (4). Theory and application of multivariate statistical methods. Topics include: likelihood and Bayesian inference for the multivariate normal model, visualization of multivariate data, data reduction techniques, cluster analysis, and multivariate statistical models. Prerequisites: Statistics 200A-B-C and Mathematics 121A.

250 Biostatistics (4). Statistical methods commonly used to analyze data arising from clinical studies. Topics include analysis of observational studies and randomized clinical trials, techniques in the analysis of survival and longitudinal data, approaches to handling missing data, meta-analysis, nonparametric methods. Prerequisite: Statistics 210.

254 Regression Methods for Correlated Data (4). Introduction to statistical methods for analyzing correlated data from experiments and cohort studies. Topics covered include repeated measures ANOVA, linear and non-linear mixed models, and generalized estimating equations. Emphasizes both theoretical development and application of methods. Prerequisite: Statistics 212 or equivalent.

257 Introduction to Statistical Genetics (4). Provides students with knowledge of the basic principles, concepts, and methods used in statistical genetic research. Topics include principles of population genetics, and statistical methods for family- and population-based studies. Prerequisites: two quarters of upper-division or graduate training in statistical methods. Same as Epidemiology 215.

260 Inference with Missing Data (4). Statistical methods and theory useful for analysis of multivariate data with partially observed variables. Bayesian and likelihood-based methods developed. Topics include EM-type algorithms, MCMC samplers, multiple imputation, and general location model. Applications from economics, education, and medicine are discussed. Prerequisites: Statistics 200A-B-C and 210.

262 Theory and Practice of Sample Surveys (4). Covers the basic techniques and statistical methods used in designing surveys and analyzing collected survey data. Topics to be covered include simple random sampling, ratio and regression estimates, stratified sampling, cluster sampling, sampling with unequal probabilities, multistage sampling, and methods to handle nonresponse. Prerequisites: Statistics 120A-B-C or equivalent.

281 Topics in Astrostatistics (1 to 4). Topics in statistical methods for astronomy, astrophysics, particle physics, and solar physics, typically including spectral analysis, image processing and analysis, time series, classification, clustering, massive data, etc. Emphasizes computationally intensive methods, Bayesian and frequentist methods, machine learning, and signal processing. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

295 Special Topics in Statistics (4). May be repeated for credit as topics vary.

298 Thesis Supervision (2 to 12). Individual research or investigation conducted in preparation for the M.S. thesis option or the dissertation requirements for the Ph.D. program.

299 Individual Study (2 to 12). Individual research or investigation under the direction of an individual faculty member.

INTERDISCIPLINARY STUDIES

UCI offers a variety of interdisciplinary programs of study which span the boundaries of traditional academic scholarship and provide students with opportunities to pursue subject areas deriving from the interaction of different disciplines. Faculty participation is determined by research and teaching interests and, as such, faculty may be drawn from various departments and schools across the campus.

This section presents information about the following:

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Computer Science and Engineering (major) ..... p. 370
Civic and Community Engagement (minor) ..... p. 372
Global Sustainability (minor) ..... p. 373
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Native American Studies (minor) ..... p. 374
Networked Systems (graduate program) ..... p. 375
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The School of Humanities section presents information about the following:

African American Studies (major, minor) ..... p. 254
Archaeology (minor) ..... p. 258
Asian American Studies (major, minor, graduate emphasis) p. 260
Asian Studies (minor) ..... p. 312
Jewish Studies (minor) ..... p. 313
Latin American and Caribbean Studies (minor) ..... p. 314
Religious Studies (major, minor) ..... p. 324
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The School of Social Sciences section presents information about:

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Conflict Resolution (minor) ..... p. 495

UNDERGRADUATE STUDY

Undergraduate Major in Business Information Management

As the business environment becomes increasingly global and information-centric, the need has increased for graduates who understand and can use technology that gathers and provides information, who are able to distill and recognize patterns in that information, and who can apply those analyses to achieve business objectives.

The undergraduate Business Information Management major administered by the Donald Bren School of Information and Computer Sciences is a collaborative, interdisciplinary degree program between the Bren School and The Paul Merage School of Business. The program seeks to educate students to understand and then apply the theories and concepts of a broad, integrated curriculum covering computing, informatics, business fundamentals, and analytical decision-making. The major prepares students for a wide variety of careers and life experiences. Business Information Management majors can pursue careers in the for-profit and not-for-profit sectors or can proceed to graduate school in several disciplines, including information systems, computing, economics, business, and law.

The curriculum is presented across three general academic areas: Computing (computer science, informatics, and software); Business Foundations (accounting, finance, marketing, strategy, and operations); and Analytical Methods (mathematics, statistics, economics, management science, and decision analysis). The fundamentals of information and computer science, including the rudiments of software design and construction with an emphasis on data management, provide the foundation for understanding, describing, and evaluating the technology through which most business information is gathered and presented. The business fundamentals, covering all the functional areas in the Merage School, provide a background and context in which information and its analysis will be applied.

ADMISSIONS

If the number of Business Information Management applicants exceeds the number of positions available, applicants may be subject to screening beyond minimum University of California admissions requirements.

Freshmen Applicants: See pages 33–37.

Transfer Applicants: Junior-level applicants who satisfactorily complete the following requirements will be given preference for admission:

1. One year of discrete mathematics if available; if not, first year-calculus.
2. Completion of one year of transferable computer science courses*; at least one of these should involve concepts such as those found in Java, Scheme, C++, or other object-oriented or high-level programming language.
3. Completion of courses equivalent to Economics 20A-B and Management 30A, 30B.

*NOTE: Additional computer science courses beyond the two required are strongly recommended, particularly those that align with the major(s) of interest. Java is used extensively in the curriculum; therefore, transfer students should plan to learn it by studying on their own or by completing a Java-related programming course prior to their first quarter at UCI.

Additional courses beyond those required for admission must be taken to fulfill the lower-division degree requirements, as many are prerequisites for upper-division courses. For some transfer students, this may mean that it will take longer than two years to complete their degree.

More information is available at http://www.ics.uci.edu/ugrad or at the Bren School of ICS Student Affairs Office; telephone (949) 824-5156; e-mail: ucounsel@uci.edu.

REQUIREMENTS FOR THE B.S. DEGREE IN BUSINESS INFORMATION MANAGEMENT

University Requirements: See pages 55–62.

Major Requirements

A. *Lower-Division:* Either Informatics 41, 42, and 43, *or* ICS 21, ICS 22, ICS 23, and ICS 52, *or* ICS 21, ICS 22, and Informatics 43; Mathematics 2A-B, ICS 6D/Mathematics 6D, Mathematics 6G, Statistics 67/Mathematics 67, Economics 20A-B, Management 30A, 30B.

B. *Upper-Division Core:* Management 101, 102, 105, 107, 109, 110, 169, 173, 178, 189; CS 121/Informatics 141, CS 122A/EECS 116, CS 122B, CS 134, and Informatics 143.

C. *Electives:* Four upper-division courses, except independent study and internships, with at least two of the four courses to be taken within the Bren School. Upper-division courses completed via the UC Education Abroad Program may also be utilized toward this requirement upon prior approval by the Bren School of ICS Student Affairs Office.

NOTE: Students majoring in Business Information Management may not double major in Business Administration nor minor in Management, Informatics, or Information and Computer Science.

Sample Program of Study — Business Information Management

FALL	WINTER	SPRING
Freshman		
Informatics 41	Informatics 42	Informatics 43
Math 2A	Math 2B	Math 6G
UC Entry Level Writing	Gen. Ed. (I)	Gen. Ed. (I)
	Gen. Ed. (VI)	
Sophomore		
Management 30A	Management 30B	Management 101
Economics 20A	Economics 20B	Gen. Ed. (IV)
ICS 6D/Math 6D	Stats 67/Math 67	Gen. Ed. (III)
Gen. Ed. (II)	Gen. Ed. (IV)	
Junior		
Management 102	CS 121/Informatics 141	CS 122B
Management 107	CS 122A	UD Writing
Gen. Ed. (IV)	Management 178	Gen. Ed. (VII)
UD Elective	Gen. Ed. (VIII)	
Senior		
Management 105	Management 169	Informatics 143
Management 109	Management 189	Management 110
Management 173	UD Elective	UD Elective
UD Elective	CS 134	

Students are advised that this sample program lists the minimum requirements; it is possible that students may have to take additional courses to prepare for required courses.

The lower-division writing requirement must be completed by the end of the seventh quarter at UCI.

It is strongly recommended that students meet with an academic advisor to create an academic plan tailored to meet their specific areas of interest.

Undergraduate Major in Computer Science and Engineering

The undergraduate program in Computer Science and Engineering is administered by faculty from two academic units: the Department of Computer Science (CS) in the Donald Bren School of Information and Computer Sciences, and the Department of Electrical Engineering and Computer Sciences (EECS) in The Henry Samueli School of Engineering. For faculty listings from respective departments, see pages 352 and 230. Successful completion of the program leads to a B.S. degree in Computer Science and Engineering.

Program Educational Objectives: Graduates of the program will (1) demonstrate broad knowledge of computer science and engineering; (2) design, describe, and use state-of-the-art hardware/software systems; (3) maintain awareness of contemporary issues in computer science and engineering in a global and societal context and an understanding of the professional and ethical responsibilities of their profession; (4) demonstrate effective oral and written communication. (Program educational objectives are those aspects of computer science and engineering that help shape the curriculum; achievement of these objectives is a shared responsibility between the student and UCI.)

This program is designed to provide students with the fundamentals of computer science, both hardware and software, and the application of engineering concepts, techniques, and methods to both computer systems engineering and software system design. The program gives students access to multidisciplinary problems in engineering with a focus on total systems engineering. Students learn the computer science principles that are critical to development of software, hardware, and networking of computer systems. From that background, engineering concepts and methods are added to give students exposure to circuit design, network design, and digital signal processing. Elements of engineering practice include systems view, manufacturing and economic issues, and multidisciplinary engineering applications.

Career Paths. Most likely careers will involve building the computer-based infrastructure—computers, networks, embedded devices, as well as operating systems, compilers, and networking software. The focus is on cooperation between hardware and software to yield the highest performance. Examples of such problem areas would be in traffic management, flight control, earthquake monitoring, automotive control, and smart homes.

ADMISSIONS

High School Students: Students must have completed four years of mathematics through pre-calculus or math analysis and are advised to have completed one year each of chemistry and physics. One semester of programming course work is also advised. That preparation, along with honors courses and advanced placement courses, is fundamental to success in the program.

UCI requires applicants to take two SAT Subject Tests, selected from two different subject areas, for example, science and history/social studies, or literature and language. If one of the selected subject areas is mathematics, applicants must take Math Level 2. Also, The Henry Samueli School of Engineering recommends that freshmen applicants in Engineering majors take the SAT Subject Test, Math Level 2, as one of the two required SAT Subject areas.

Transfer Students. Students are encouraged to complete as many of the lower-division degree requirements as possible prior to transfer, including one year of calculus, one year of calculus-based physics (mechanics, electricity, and magnetism with laboratory), one year of programming with at least one course in object-oriented programming (Java recommended), and one additional approved transferable course for the major (an approved math, science, or CSE course). Students who enroll at UCI in need of completing lower-division course work may find that it will take longer than two years to complete their degrees. For further information, contact the Donald Bren School of Information and Computer Sciences at (949) 824-5156 or The Henry Samueli School of Engineering at (949) 824-4334.

Change of Major

Students interested in changing their major to Computer Science and Engineering should contact the Student Affairs Office in the Bren School of ICS or The Henry Samueli School of Engineering for information about change-of-major requirements. Information is also available at http://www.changeofmajor.uci.edu.

REQUIREMENTS FOR THE B.S. DEGREE IN COMPUTER SCIENCE AND ENGINEERING

University Requirements: See pages 55–62.

Major Requirements

Mathematics and Basic Science Courses:

Mathematics Courses: Students must complete a minimum of 32 units of mathematics including Mathematics 2A-B, 2D, 2J, ICS 6B/Mathematics 6B, ICS 6D/Mathematics 6D, Mathematics 6G or 3A, and Statistics 67/Mathematics 67.

Basic Science Courses: Students must complete a minimum of 18 units of basic science courses including Physics 7B/7LB or Physics 7C/7LC; and Physics 7D and 7LD.

Students select, with the approval of a faculty advisor, two additional basic science courses needed to satisfy school and department requirements.

Engineering and Computer Topics Courses:

Students must complete a minimum of 72 units of *engineering topics,* 24 units of engineering design, 60 units of *computer topics,* and 36 units of upper-division computer topics. The following courses must be completed:

CSE21, CSE22, CSE23, CSE25, CSE31, CSE31L, CSE70A, CSE90, CSE104, CSE112, CSE120A, CSE121, CSE132, CSE135A, CSE135B, CSE141, CSE142, CSE151, CSE161, CSE181A-B-CW, Computer Science 145A-B or both EECS112L and EECS113, EECS148 or Computer Science 132.

Students select, with the approval of a faculty advisor, any additional engineering and computer topics courses needed to satisfy school and department requirements.

Tracks: Students must complete one of the tracks listed below.

Algorithms: Students complete two of the following courses: Computer Science 162, 163, 164, 165, 167, 168 or 179.

Artificial Intelligence: Students complete two of the following courses: Computer Science 116, 171, 175, 177, 178, or 179.

Graphics/Vision: Students complete one course from each set: Computer Science 112 or EECS104; Computer Science 116 or EECS101.

Parallel and Distributed Computing: Students complete two courses from EECS117, EECS123, and Computer Science 131.

(The nominal Computer Science and Engineering program will require 189 units of courses to satisfy all university and major requirements. Because each student comes to UCI with a different level of preparation, the actual number of units will vary).

NOTE: Students majoring in Computer Science and Engineering may not complete the major in Computer Engineering, the major in Computer Science, the major or minor in Information and Computer Science, or the minor in Informatics.

Sample Program of Study — Computer Science and Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
CSE21	Physics 7B, 7LB	Physics 7D, 7LD
General Education	or Physics 7C, 7LC	CSE23
	CSE22	General Education
Sophomore		
ICS6D/Mathematics 6D	ICS6B/Mathematics 6B	Mathematics 6G or 3A
Mathematics 2J	CSE25	Science Elective
CSE31	CSE31L	CSE70A
Science Elective	CSE90	General Education
	General Education	
Junior		
CSE112	CSE104	EECS148 or
CSE121	CSE132	Computer Science 132
CSE161	Stats 67/Mathematics 67	CSE120A
General Education	General Education	Comp. Sci. 145A-B or EECS112L* and EECS113
Senior		
CSE181A	CSE181B	CSE181CW
CSE135A	CSE135B	CSE142
CSE151	CSE141	General Education
Track	General Education	Track
	General Education	

* EECS112L is only offered in Winter.

Courses in Computer Science and Engineering

***(Schedule of Classes* designation: CSE)**

LOWER-DIVISION

CSE21 Introduction to Computer Science I (6). Introduces fundamental concepts related to computer software design and construction. Develops initial design and programming skills using a high-level language. Fundamental concepts of control structures, data structures, and object-oriented programming. Same as ICS 21. Only one course from CSE21/ICS 21 and ICS H21 may be taken for credit. May not be taken for credit after Informatics 42. **(II or V; IX)**

CSE22 Introduction to Computer Science II (6). Abstract behavior of classic data structures (stacks, queues, sorted and unsorted maps), alternative implementations, analysis of time and space efficiency. Recursion. Object-oriented and functional programming. Prerequisites: CSE21/ICS 21 or ICS H21 with a grade of C or better. Same as ICS 22. Only one course from CSE22/ICS 22, ICS H22, Informatics 41, or Informatics 42 may be taken for credit. **(II or V)**

CSE23 Fundamental Data Structures (4). Focuses on implementation and mathematical analysis of fundamental data structures and algorithms. Covers storage allocation and memory management techniques. Prerequisites: CSE22/ICS 22 or ICS H22 with a grade of C or better, *or* Informatics 42 with a grade of C or better, *or* Engineering EECS40. Same as ICS 23. Only one course from CSE23/ICS 23 and ICS H23 may be taken for credit. **(V)**

CSE25 Computing Tools for Computer Science and Engineering (4). Introduces computer-based mathematical and engineering tool usage and the C programming language. Prerequisites: CSE21/ICS 21 and Mathematics 2A.

CSE31 Introduction to Digital Systems (4) F, Summer. Digital representation of information. Specifications of combinational and sequential systems. Analysis and design of networks of gates and flip flops. Standard modules and their use. Introduction to algorithmic systems: datapath and control. Prerequisite: CSE21/ICS 21, EECS10, or MAE10. Same as EECS31. (Design units: 2)

CSE31L Introduction to Digital Logic Laboratory (3) W. Introduction to common digital building blocks: gates, memory circuits, MSI components. Operating characteristics, specifications, and applications. Design of simple combinational and sequential digital systems (processors state machines). Construction and debugging techniques, using hardware description languages and CAD tools. Prerequisites: CSE31/EECS31; EECS10 or EECS 12 or CSE22/ICS 22. Same as EECS31L. (Design units: 3)

CSE70A Network Analysis I (4) W, Summer. Modeling and analysis of electronic networks. Basic network theorems. Sinusoidal steady state and transient analysis of RLC networks and the impedance concept. Corequisite: Mathematics 2J or 3D. Prerequisites: Physics 7D; CSE21/ICS 21, EECS10, or MAE10. Same as EECS70A. (Design units: 1)

CSE90 Systems Engineering and Technical Communications (2). Introduces systems engineering concepts, including specifications and requirements, hardware and software design, integration, testing, and documentation. Emphasizes organization and writing of reports and effective presentations.

UPPER-DIVISION

CSE104 Principles of Operating Systems (4). Principles and concepts of process and resource management, especially as seen in operating systems. Processes, memory management, protection, scheduling, file systems, and I/O systems are covered. Concepts illustrated in the context of several well-known systems. Prerequisites: CSE23/ICS 23, and ICS 51 or CSE31/EECS31 with grades of C or better. Same as Computer Science 143A. Only one course from CSE104/Computer Science 143A and EECS111 may be taken for credit.

CSE112 Electronic Devices and Circuits (4). Semiconductor properties, carrier transport, P-N junctions, metal-semiconductor junctions, diodes, MOS transistors, transistor equivalent circuits, amplifiers, invertors, digital circuits, CMOS circuits, and logic gates. Prerequisites: Physics 7D, CSE70A/EECS70A. (Design units: 1)

CSE120A Discrete-Time Signals and Systems (4). Analysis of discrete-time linear-time-invariant (DTLTI) systems in the time domain and using z-transforms. Introduction to techniques based on Discrete-Time, Discrete, and Fast Fourier Transforms. Examples of their application to digital signal processing and digital communications. Prerequisite: CSE70A/EECS70A. Same as EECS150B. (Design units: 0)

CSE121 Software Tools and Methods (4). Concepts and techniques of constructing software in a systematic fashion, including detailed design techniques, specifications, programming methods, quality-inducing procedures, development tools, team techniques, testing, estimation, and performance improvement. Laboratory work involves exercises to illustrate important concepts, methods, and tools. Prerequisite: Informatics 43, ICS 52, or CSE90 with a grade of C or better. Same as Informatics 111.

CSE132 Organization of Digital Computers (4). Building blocks and organization of digital computers, the arithmetic, control, and memory units, and input/out devices and interfaces. Microprogramming and microprocessors. Prerequisite: CSE31L/EECS31L. Same as EECS112. CSE132/EECS112 and Computer Science 152 may not both be taken for credit. (Design units: 4)

CSE135A Digital Signal Processing (3) F. Nature of sampled data, sampling theorem, difference equations, data holds, z-transform, w-transform, digital filters, Butterworth and Chebychev filters, quantization effects. Prerequisite: CSE120A/EECS150B. Same as EECS152A. (Design units: 2)

CSE135B Digital Signal Processing Design and Laboratory (3) W. Students plan and perform 10 core laboratory exercises covering signal synthesis and analysis with various filter and frequency transform processes. Models of radio and radar/sonar signal processing are included. Prerequisite: CSE135A/EECS152A. Same as EECS152B. (Design units: 3)

CSE141 Concepts in Programming Languages I (4). In-depth study of several contemporary programming languages stressing variety in data structures, operations, notation, and control. Examination of different programming paradigms, such as logic programming, functional programming and object-oriented programming; implementation strategies, programming environments, and programming style. Prerequisites: Informatics 42 or ICS 51 or CSE31/EECS31 with a grade of C or better, and Informatics 45 or ICS23/CSE23 with a grade of C or better. Same as Computer Science 141/Informatics 101.

CSE142 Compilers and Interpreters (4). Introduction to the theory of programming language processors covering lexical analysis, syntax analysis, semantic analysis, intermediate representations, code generation, optimization, interpretation, and run-time support. Prerequisite: CSE141/Computer Science 141/Informatics 101. Same as Computer Science 142A.

CSE151 Introduction to VLSI (4) F. A first course in the design of Very Large Scale Integrated (VLSI) systems and chips. Review of CMOS VLSI technology. Analysis and synthesis of basic and complex CMOS gates. Introduction to CAD methodology and usage of CAD tools. Prerequisite: CSE132/EECS112; CSE112 or EECS170B. Same as EECS115. (Design units: 4)

CSE161 Design and Analysis of Algorithms (4). Time and space complexity of algorithms. Models of computation, techniques for efficient algorithm design, effect of data structure choice on efficiency of an algorithm. Fast algorithms for problems such as sorting, set manipulation, graph problems, matrix multiplication, Fourier transforms, and pattern matching. NP-complete problems. Prerequisites: CSE23/ICS 23, and CSE31/EECS31 or ICS 51 with grades of C or better; ICS 6D/Mathematics 6D; ICS 6B/Mathematics 6B; Mathematics 6G or 3A; Mathematics 2B. Same as Computer Science 161.

CSE181A-B Senior Design Project (3-3). Teaches problem definition, detailed design, integration and testability with teams of students specifying, designing, building, and testing complex systems. Lectures include engineering values, discussions, and ethical ramifications of engineering decisions. Corequisite: CSE135A/EECS152A. Prerequisite: CSE104/Computer Science 143A. CSE181A-B-C must be taken in the same academic year. (Design units: 3-3)

CSE181C Senior Design Project (3). Completion, documentation, and presentation of projects started in CSE181A-B. Teaches engineering documentation writing and presentation skills. Students write comprehensive project reports individually. Each student participates in a public presentation of the project's results. Prerequisites: CSE181A-B and satisfactory completion of the lower-division writing requirement. CSE181A-B-C must be taken in the same academic year.

Minor in Civic and Community Engagement

Kristen Day, **Director**

Core Faculty

Stanley Bassin, *Health Sciences Clinical Professor, Department of Medicine (Cardiology)*
Peter J. Bryant, *Professor of Developmental and Cell Biology*
William J. Cooper, *Director of the Urban Water Research Center (UWRC) and Professor of Civil and Environmental Engineering, Chemical Engineering and Materials Science, and Planning, Policy, and Design*
Kristen Day, *Director of the Minor in Civic and Community Engagement and Professor of Planning, Policy, and Design*
Paula Garb, *Associate Director of International Studies and Lecturer in Anthropology*
Gillian Hayes, *Assistant Professor of Informatics*
Joseph Mahoney, *Associate Professor of Education and of Psychology and Social Behavior*
Virginia Mann, *Professor of Cognitive Sciences and Education*
Carrie J. Noland, *Professor of French*
James S. Nowick, *Professor of Chemistry*
Ellen F. Olshansky, *Director of the Program in Nursing Science and Professor, Program in Nursing Science*
Jone L. Pearce, *Co-Director of the Center for Leadership and Team Development and Dean's Professor of Management*

Affiliated Faculty

Molly Lynch, *Assistant Professor of Dance*
Michael J. Montoya, *Assistant Professor of Anthropology and Chicano/Latino Studies*
Bill Tomlinson, *Associate Professor of Informatics*
Tiffany Willoughby-Herard, *Assistant Professor of African American Studies*
Maria Estela Zarate, *Assistant Professor of Education*

The minor in Civic and Community Engagement is an interdisciplinary program that seeks to provide students with the knowledge, skills, attitudes, and values to engage as citizens and active community members in the twenty-first century. The minor is distinguished both by *what* students learn, and by *how* they learn it.

Teaching and learning. The minor introduces students from majors across the campus to the traditions and public movements of service and their historical and contemporary philosophical underpinnings. The minor provides a theoretical and empirical framework to increase students' understanding of public problems (environmental, social, and other) from multiple disciplinary perspectives. Students learn about strategies to address public problems, including through public policy; through the involvement of community-based and nonprofit organizations; and through the cultivation of leadership. The minor is intended to help students build on their major programs of study to make connections between public problems and issues of equity and social justice.

Research. The minor increases students' knowledge of the epistemological and methodological underpinnings of community-based research as a strategy for understanding and addressing public problems.

Service. The minor helps students to ground their understanding of public problems by participating in service-learning opportunities and by reflecting critically on those experiences.

The minor is open to all UCI students. Course descriptions are available in the academic department sections of the *Catalogue*.

More information about the minor in Civic and Community Engagement is available from the Division of Undergraduate Education, at (949) 824-3291 or at cceminor@uci.edu, or online at http://www.due.uci.edu/engagement_minor/.

Requirements for the Minor

Completion of eight courses (28 units total). A maximum of two courses for the minor may overlap with courses required for a student's major or for another minor.

A. University Studies 10.

B. University Studies 100.

C. Four upper-division elective courses related to public problems and civic and community engagement, from the following:

Environmental Stewardship: Biological Sciences E150, E181, E189, 191A-B, 191C, Earth System Science 180, 182, 190A-B, 190C, Economics 145E, International Studies 120, Planning, Policy, and Design 131, 132, 136, 138, 139, Political Science 141A, 143D, Public Health 145, 160, 164, Social Ecology 186A-B, 186C, Women's Studies 165A.

Educational Equity: Asian American Studies 139, Chicano/Latino Studies 182, Economics 158, Education 104E, 121, 124, 128, 132, 139, 150, 160, 182, Informatics 165, Political Science 126E, Social Ecology 181, Studio Art 149.

Health and Communities: Anthropology 128B, 134D, 134G, Asian American Studies 134, Chicano/Latino Studies 172, 176, Environmental Analysis and Design E127, E191C, History 136B, Informatics 171, International Studies 122, Nursing Science 170, Philosophy 131C, Planning, Policy, and Design 111, 112, 170, Public Health 122, 143, 147, 167, 168, 173, Social Ecology 131, Women's Studies 165B.

Public History and Public Art: African American Studies 111A, 111B, 133A, 133B, 138, Art History 140A, 140B, 140C, 163, 164A, 164B, 164C, Asian American Studies 137, Chicano/Latino Studies 132A, 132B, 134, 135, Classics 175, Comparative Literature 100A, 105, 107, 140, Dance 110, Drama 103, 122, English 105, History 130B, 142A, 148B, 150, 150A, 150B, 151A, 151B, 151C, 152, Music 148, Religious Studies 106, 120, 130, Spanish 100E, 110C, Studio Art 116, 116A, 118, 121, 122, 123A.

Global Citizenship: Anthropology 125X, 136D, Asian American Studies 101, Chicano/Latino Studies 161, 163, Environmental Analysis and Design E113, Global Cultures 191, International Studies 121, Planning, Policy, and Design 140, Political Science 126C, 146A, 153E, 154G, 172A, Social Science 177A, 184D.

Social Justice: African American Studies 115, 117, 124, 128, 132A, 132B, Anthropology 121D, Asian American Studies 138, 161, 167, Chicano/Latino Studies 148, Comparative Literature 130, Criminology, Law and Society C120, Film and Media Studies 130, History 146, 152B, Philosophy 131A, Planning, Policy, and Design 102, 113, Psychology 127G, Psychology and Social Behavior P117D, Social Science 175B, Sociology 167A, Women's Studies 110A, 110B, 156A, 157B, 158B.

Leadership and Public Policy: African American Studies 151, 162, Anthropology 136D, Asian American Studies 132, 136, 140, Chicano/Latino Studies 143, 147, 152A, International Studies 152A, Planning, Policy, and Design 166, 167, 169, 176, Political Science 121D, 121E, 124A, 124C, 124D, 126A, 126D, 132B-C, 134A, 154G, Social Science 181, 184A, 184B.

Additional elective courses may be substituted by petition.

D. One hundred hours of an approved internship related to civic and community engagement. Internships will typically be completed over two or more quarters, for a total of eight units toward the minor and a total of 100 hours of community service-learning. If the internship is completed in one quarter or in less than eight units, an additional elective course should be completed. Internships must be approved for credit toward the minor. See the Web site for the minor for a list of hours of community service-learning for internship options at http://www.due.uci.edu/engagement_minor.

The internship can be completed through the following courses: Anthropology 197, Arts 199, Biological Sciences 14, 101, 102, Chemistry 191, Chicano/Latino Studies 191A-B-C, Education 100, 141A-B-C, 160L, 181B, Engineering 197A, Humanities 195, Informatics 117, 132, 163, 191A-B-C, Mathematics 192, Nursing Science 170L, Physical Sciences 5, 105, 106, Physics 191, Psychology 141J-K-L, 144 A-B-C, 145P-Q-R, Public Health 195, Social Ecology 195, Social Science 186A-B-C, 193B-C, 194A, 194B, 195A-B-C, 196, 197, University Studies 181, 185, 195.

Residence Requirement for the Minor: Students must complete at least four of the required courses for the minor in residence at UCI.

COURSES

***(Schedule of Classes* designation: Uni Stu)**

University Studies 10 Introduction to Civic and Community Engagement (4). Provides a foundation for understanding the role of public scholarship, civic engagement, and social action, and the relationship between service learning and engaged citizenship. Introduces key theoretical and research methodologies on the traditions and innovations of civic and community engagement. **(IX)**

University Studies 100 Doing Research in the Community (4). Critically reimagines the research endeavor and its participants and outcomes. Grapples with methods, values, and relationships involved in research, and explores alternative conceptions of research, focusing on community-based research. Students work in teams on real-world community research projects with faculty mentors and community partners. Prerequisite: University Studies 10.

University Studies 181 Internship in Civic and Community Engagement (2 to 4). Provides an opportunity to extend learning into a community-based setting addressing important social, environmental, and public issues. The internship project has a creative and scholarly component where students initiate their own action or inquiry experience. Prerequisite: University Studies 10. May be taken for credit twice.

Minor in Global Sustainability

321 Steinhaus Hall; (949) 824-6006; Fax (949) 824-2181
Peter J. Bryant and Peter A. Bowler, **Co-Directors**

Core Faculty

Peter A. Bowler, *Director of the UCI Arboretum and Herbarium, UC Natural Reserve System Academic Coordinator, and Senior Lecturer with Security of Employment, Ecology and Evolutionary Biology*
Peter J. Bryant, *Professor of Developmental and Cell Biology*
Michael L. Burton, *Professor Emeritus of Anthropology*
William S. Reeburgh, *Professor Emeritus of Earth System Science*
Susan E. Trumbore, *Professor of Earth System Science*

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

As a result of population growth and the pursuit of higher standards of living, humanity has initiated many global trends that cannot be sustained indefinitely. Some of these trends are physico-chemical in nature, such as the rapid depletion of fossil fuels and the increasing pollution of our environment, including the accumulation of ozone-depleting chemicals with consequent increase of ultraviolet radiation at the earth's surface, and the buildup of carbon dioxide that is almost certainly causing global warming. Other trends are biological ones including the degradation of agricultural land, the destruction of many kinds of wildlife habitat with associated high rates of species extinction, and the depletion of wildlife

populations by over-exploitation. Global changes are also taking place in the human situation including loss of cultural diversity, a growing income gap between rich and poor nations leading to deepening poverty and additional pressure for biological resource exploitation, accelerating urbanization with associated social problems, and regional population and economic imbalances leading to escalating political tensions and potential for conflict. This program examines the causes of, and interrelationships between, these problems and considers new approaches to solving them. Its goal is to provide broad, interdisciplinary training that will allow students to better understand and effectively deal with the serious environmental problems that we will face in the twenty-first century.

The minor is open to all UCI students. Course descriptions are available in the academic department sections of the *Catalogue.*

Requirements for the Minor

Completion of an introductory sequence of three core courses: Earth System Science 1 (The Physical Environment), Biological Sciences 65 (Biodiversity and Conservation), and Anthropology 20A (People, Cultures, and Environmental Sustainability).

Three relevant elective courses (12 units): One elective course must be taken in each of the following three disciplines, and at least two of these must be upper division. Students may select from the following list and must have their choices approved by a panel of participating faculty:

Biological Sciences: 55 (Introduction to Ecology), 94 (From Organisms to Ecosystems), E106 (Processes in Ecology and Evolution), E150 (Conservation Biology), E175 (Restoration Ecology), E178 (Ocean Ecology), E179 (Limnology and Freshwater Biology), E186 (Population and Community Ecology).

Physical Sciences/Engineering: Earth System Science 3 (Oceanography), 5 (The Atmosphere); Engineering 20 (Energy and Society); Civil and Environmental Engineering CEE121 (Transportation Systems I: Analysis and Design), CEE122 (Transportation Systems II: Operations and Control), CEE123 (Transportation Systems III: Planning and Forecasting); Physics 16 (Physics of Weapons and Their Control), 20C (Observational Astronomy).

Social Sciences/Social Ecology: Anthropology 125A (Economic Anthropology), 125B (Ecological Anthropology); Economics 145E (Economics of the Environment); Planning, Policy, and Design 133 (Environmental Law), 134 (Human Ecology); Political Science 149 (when topic is Global Environmental Politics); Sociology 44 (Population).

Senior Seminar on Global Sustainability I, II, III: During their final year in this program, students complete Biological Sciences 191A-B-C (same as Earth System Science 190A-B-C and Social Ecology 186A-B-C) which includes a seminar, directed study, and independent research in a relevant area. This work forms the basis for a senior research paper which is completed and presented near the end of spring quarter in a colloquium.

Minor in the History and Philosophy of Science

(949) 824-6495
Brian Skyrms, **Director**

Participating Faculty

Francisco J. Ayala, *University Professor and Donald Bren Professor of Biological Sciences*
Jeffrey A. Barrett, *Department Chair and Professor of Logic and Philosophy of Science*
William H. Batchelder, *Professor of Cognitive Sciences*
Paul C. Eklof, *Professor Emeritus of Mathematics*
Matthew D. Foreman, *Professor of Mathematics and of Logic and Philosophy of Science*
Douglas M. Haynes, *Director of the ADVANCE Program for Faculty Equity and Diversity and Associate Professor of History*
Donald Hoffman, *Professor of Cognitive Sciences*
Karl G. Hufbauer, *Professor Emeritus of History*
Mary-Louise Kean, *Professor Emerita of Cognitive Sciences*
Stuart M. Krassner, *Professor Emeritus of Developmental and Cell Biology*
J. Karel Lambert, *Professor Emeritus of Philosophy*
R. Duncan Luce, *UCI Distinguished Professor Emeritus of Cognitive Sciences and Economics*
Penelope Maddy, *UCI Distinguished Professor of Logic and Philosophy of Science and of Mathematics*
Louis Narens, *Professor of Cognitive Sciences*
Alan Nelson, *Professor Emeritus of Philosophy*
Riley Newman, *Professor Emeritus of Physics*
Robert Newsom, *Professor Emeritus of English*
Terence D. Parsons, *Professor of Philosophy, UCLA*
A. Kimball Romney, *Professor Emeritus of Anthropology*
Michael R. Rose, *Professor of Ecology and Evolutionary Biology*
Jonas Schultz, *Professor Emeritus of Physics*
Brian Skyrms, *Director of the Minor in the History and Philosophy of Science and UCI Distinguished Professor of Logic and Philosophy of Science and of Economics*
Norman M. Weinberger, *Research Professor of Neurobiology and Behavior*
Peter Woodruff, *Professor Emeritus of Philosophy*

The minor in the History and Philosophy of Science is intended for students who wish to study the history of science, the philosophical foundations of scientific inquiry, and the relationship between science and other fields. The history of science explores how science is actually done and how it has influenced history. This may involve tracking down an idea's source or its influences, evaluating the cultural forces at work in the generation of a scientific theory or the reaction of culture to science, or taking a detailed look at the work of a particular scientist or movement within science. The philosophy of science is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences. Philosophy of science courses cover such topics as the role of logic and language in science and in mathematics, scientific explanation, evidence, and probability. These courses may also cover work that has been done on the philosophical problems in specific sciences—for example, the direction of time in physics, the model of mind in psychology, the structure of evolution theory in biology, and the implications of Gödel's incompleteness theorems for mathematics.

The minor is available to all UCI students. Course descriptions may be found in the academic department sections of the *Catalogue.*

Requirements for the Minor

Completion of seven courses as follows: (1) two courses selected from Logic and Philosophy of Science 31, 40, History 60; (2) two courses selected from History 135B, 135C, 135D, 135E, Philosophy 110–115 (when topic is science), Psychology 120H; and (3) three courses selected from Linguistics 141, 143, Logic and Philosophy of Science 106, 107, 108, 140, 141A, 141B, 141C, 141D, 142, 143, 145, 146, 147.

Minor in Native American Studies

Participating Faculty

Rachel O'Toole, *Assistant Professor of History*
Justin B. Richland, *Associate Professor of Criminology, Law and Society*
Jaime E. Rodríguez, *Professor of History*
Gabriele Schwab, *UCI Chancellor's Professor of Comparative Literature and English*
Pat Seed, *Professor of History*
Tanis Thorne, *Lecturer in History*
Steven C. Topik, *Professor of History*

The minor in Native American Studies is an interdisciplinary, interschool program which focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis. Study in the minor is enriched by the research and teaching interests of faculty from different departments.

The minor is open to all UCI students. Advising information is available from the undergraduate counseling offices in the Schools of Humanities, Social Ecology, and Social Sciences.

Course descriptions are available in the academic department sections and at http://eee.uci.edu/clients/tcthorne/idp/.

Requirements for the Minor

Core courses: Religious Studies 90 (Native American Religions and the Environmental Ethic; same as History 12); History 15A (Native American History); and Sociology 65 (Cultures in Collision: Indian-White Relations Since Columbus; same as Anthropology 85A).

Four upper-division courses selected from Anthropology 121D (Cross-Cultural Studies of Gender), 135A (Religion and Social Order), 162A (Peoples and Cultures of Latin America); Art History 175 (Studies in Native and Tribal Art); Criminology, Law and Society C158 (U.S. Law and Native Americans); Education 124 (Multicultural Education in K–12 Schools); History 161A (Indian and Colonial Societies in Mexico); Social Science 175B (Ethnic and Racial Communities); Women's Studies 156A (Race and Gender), 158B (Defining Women of Color).

Students may also select from the following courses when the topics presented relate to Native American Studies: Anthropology 149 (Special Topics in Archaeology), 169 (Special Topics in Area Studies); Comparative Literature 105 (Comparative Multiculturalism); English 105 (Multicultural Topics in Literature in English); History 169 (Topics in Latin American History); Sociology 149 (Special Topics: Structures), 169 (Special Topics: Age, Gender, Race, and Ethnicity).

GRADUATE STUDY

Graduate Program in Networked Systems

(949) 824-1755
http://www.networkedsystems.uci.edu
Hamid Jafarkhani, **Director**

Faculty

Ender Ayanoglu, Ph.D. Stanford University, *Director of the Center for Pervasive Communications and Computing, Professor of Electrical Engineering and Computer Science, and Conexant-Broadcom Chair* (next generation wireless, broadband, and optical communications)

Lichun Bao, Ph.D. University of California, Santa Cruz, *Assistant Professor of Computer Science* (mobile ad-hoc networks, medium access control, channel access scheduling, topology management, sensor networks, quality of service)

Magda El Zarki, Ph.D. Columbia University, *Associate Dean of Research Development for the Bren School of Information and Computer Sciences and Professor of Computer Science, Informatics, and Electrical Engineering and Computer Science* (telecommunications, networks, wireless communication, video transmission)

Hamid Jafarkhani, Ph.D. University of Maryland, *Director of Networked Systems and UCI Chancellor's Professor of Electrical Engineering and Computer Science* (communication theory, coding, wireless networks, multimedia networking)

Scott Jordan, Ph.D. University of California, Berkeley, *Professor of Computer Science and of Electrical Engineering and Computer Science* (pricing and differentiated services in the Internet, resource allocation in wireless multimedia networks, and telecommunications policy)

K. H. (Kane) Kim, Ph.D. University of California, Berkeley, *Professor of Electrical Engineering and Computer Science* (ultra-reliable distributed and parallel computing, real-time object-/component-/service-oriented programming and system engineering)

Athina Markopoulou, Ph.D. Stanford University, *Assistant Professor of Electrical Engineering and Computer Science* (networking—reliability and security, multimedia networking, and measurement and control)

Tatsuya Suda, Ph.D. Kyoto University, *Professor of Computer Science and of Electrical Engineering and Computer Science* (computer networks, distributed systems, performance evaluation)

Gene Tsudik, Ph.D. University of Southern California, *Professor of Computer Science* (security and applied cryptography, mobile/ad-hoc networks and distributed systems)

Nalini Venkatasubramanian, Ph.D. University of Illinois at Urbana-Champaign, *Professor of Computer Science* (parallel and distributed systems, multimedia servers and applications, internetworking, high-performance architectures, resource management)

The graduate program in Networked Systems is administered by faculty from two academic units: the Department of Computer Science (CS) in the Donald Bren School of Information and Computer Sciences, and the Department of Electrical Engineering and Computer Science (EECS) in The Henry Samueli School of Engineering. The program offers M.S. and Ph.D. degrees in Networked Systems.

The Networked Systems program provides education and research opportunities to graduate students in the areas of computer networks and telecommunication networks. Networked Systems include telephone networks, cable TV networks, cellular phone networks, and the Internet, as well as other emerging networks. Networked Systems are inherently interdisciplinary. By their design, they connect devices such as computers and phones using communications methods. Networked Systems therefore must address the combination of software, hardware, and communications. As a result, the Networked Systems area spans traditional departmental boundaries. At a minimum, the area draws heavily from Computer Science, Computer Engineering, and Electrical Engineering. At UCI, these areas are housed in two departments, CS and EECS. The Networked Systems program unites the strengths of these two departments and provides integrated M.S. and Ph.D. degrees in this area.

Program requirements include core, breadth, and concentration courses. The **core courses** are taken by all Networked Systems students and form a foundation for networking topics. The **breadth courses** may be selected from technical courses (including distributed systems, algorithms, data structures, operating systems, databases, random processes, and linear systems) and management and applications of technology (including educational technology, management of information technology, and social impact). The **concentration courses** may be selected from a long list including courses on networks, performance, middleware, communications, and operations research. Core, breadth, and concentration course lists are available on the Networked Systems Web site at http://www.networkedsystems.uci.edu or from the Networked Systems Program Office.

As an alternative to the Networked Systems program, students interested in networks may wish to consider the CS degree, offered by the CS Department, which includes courses in networks, compilers, computer architecture, distributed systems, algorithms, and data structures; the Computer Networks and Distributed Computing concentration, offered by the EECS Department, which includes courses in networks, algorithms, operating systems, databases, and computer architecture; or the Electrical Engineering concentration, offered by the EECS Department, which includes courses in networks, random processes, communications, linear systems, and signal processing.

Admission

Prospective graduate students apply directly to the Networked Systems program, specifying whether they wish to pursue the M.S. degree only, the M.S. and Ph.D. degrees, or the Ph.D. degree only. Applicants who do not hold a bachelor's degree in Computer Science, Computer Engineering, or Electrical Engineering may be required to take supplementary course work to demonstrate sufficient background in the field.

Applicants are evaluated on the basis of their prior academic record and their potential for creative research and teaching, as demonstrated in their application materials including official university transcripts, letters of recommendation, GRE test scores, and statement of purpose.

Master of Science Program

Students pursuing the M.S. degree may choose either Plan I (Thesis Plan) or Plan II (Comprehensive Examination Plan). Students following Plan I must complete the three core courses, two courses chosen from the breadth course list with at most one chosen from the Management and Applications of Technology list, three courses chosen from the concentration course lists with at least one course chosen from at least two different concentrations, two additional courses chosen with the approval of the advisor, and a thesis.

Students following Plan II must complete the three core courses, three courses chosen from the breadth course list with at most two chosen from the Management and Applications of Technology list, four courses chosen from the concentration course lists with at least one course chosen from at least three different concentrations, and two additional courses chosen with the approval of the advisor. Students pursuing this option must also pass a comprehensive examination which will be administered through Networked Systems 295 and will consist of a term paper on a topic relevant to the student's educational program and that term's speakers.

Doctor of Philosophy Program

The Ph.D. degree requires the following 13 courses: three core courses; three courses chosen from the breadth course list, with at most two chosen from the Management and Applications of Technology list; four courses chosen from the concentration course lists, with at least one course chosen from at least three different concentrations; and three additional courses, chosen with the approval of the research advisor. Students must also complete two teaching practicum courses (ICS 399) and a dissertation.

Courses applied to the M.S. degree can also be applied to the Ph.D. degree. Students who have taken similar graduate-level courses at another university may petition to apply these courses to the Ph.D. requirements. Ph.D. students who have served as teaching assistants, readers, or tutors at another university may petition to apply this experience toward the teaching practicum requirement. The normative time for advancement to candidacy is three years (two for students who entered with a master's degree). The normative time for completion of the Ph.D. is six years (five for students who entered with a master's degree), and the maximum time permitted is seven years.

Courses in Networked Systems

(Schedule of Classes **designation: Net Sys)**

201 Internet (4). A broad overview of basic Internet concepts. Internet architecture and protocols, including addressing, routing, TCP/IP, quality of service, and streaming. Prerequisite: EECS148, Computer Science 132, or consent of instructor. Same as EECS248A and Computer Science 232.

202 Networking Laboratory (4). A laboratory-based introduction to basic networking concepts such as addressing, sub-netting, bridging, ARP, and routing. Network simulation and design. Structured around weekly readings and laboratory assignments. Prerequisite: EECS148 or Computer Science 132. Same as Computer Science 233.

210 Advanced Networks (4). Design principles of networked systems, advanced routing and congestion control algorithms, network algorithms, network measurement, management, security, Internet economics, and emerging networks. Prerequisite: Networked Systems 201 or Computer Science 232 or EECS248A. Same as Computer Science 234.

220 Internet Technology (4). Application layer Internet protocols, potentially including client/server, WWW, file sharing, group communications, Internet programming. Prerequisite: Networked Systems 201. Same as Computer Science 235.

230 Wireless and Mobile Networking (4). Introduction to wireless networking. The focus is on layers 2 and 3 of the OSI reference model, design, performance analysis, and protocols. Topics covered include: an introduction to wireless networking, digital cellular, next generation cellular, wireless LANs, and mobile IP. Prerequisites: EECS148 or Computer Science 132, and an introductory course in probability or consent of instructor. Same as Computer Science 236.

240 Network and Distributed Systems Security (4). Overview of modern computer and networks security: attacks and countermeasures. Authentication, identification, data secrecy, data integrity, authorization, access control, computer viruses, network security. Group communication and multicast security techniques. Also covers secure e-commerce and applications of public key methods, digital certificates, and credentials. Prerequisite: EECS148 or Computer Science 132. Same as Computer Science 203.

250 Performance Analysis of Computer Communication Networks (3). Mathematical modeling and optimization of network performance and design. Data link layer and media access protocols. Queuing models for communication networks. Routing and congestion control. Prerequisite: Networked Systems 201. Same as EECS248B.

256 Network Coding: Theory and Applications (3). Theoretical frameworks for network coding: linear, algebraic, and random network coding; linear programming and combinatorial frameworks. Network code design. Benefits and costs. Practical network coding. Applications to wireless networks, content distribution, security, and other areas. Prerequisites: EECS248A/Networked Systems 201/Computer Science 232 and an introductory course in linear algebra. Same as EECS246.

260 Middleware for Networked and Distributed Systems (4). Discusses concepts, techniques, and issues in developing distributed systems middleware that provides high performance and Quality of Service for emerging applications. Also covers existing standards (e.g., CORBA, DCOM, Jini, Espeak) and their relative advantages and shortcomings. Prerequisite: undergraduate-level course in operating systems and networks or consent of instructor. Same as Computer Science 237.

261 Distributed Computer Systems (3). Design and analysis techniques for decentralized computer architectures, communication protocols, and hardware-software interface. Performance and reliability considerations. Design tools. Prerequisites: EECS211 and EECS213. Same as EECS218.

270 Topics in Networked Systems (4). Study of Networked Systems concepts. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

295 Networked Systems Seminar (1) F, W, S. Current research in networked systems. Includes talks by UCI faculty, visiting researchers, and Networked Systems graduate students. Satisfactory/Unsatisfactory only. May be repeated for credit.

Graduate Program in Transportation Science

(949) 824-5989, -5906; Fax (949) 824-8385
http://www.transci.uci.edu/
Jean-Daniel Saphores, **Director**

Faculty

Volodymyr Bilotkach, Ph.D. University of Arizona, *Assistant Professor of Economics*
Marlon G. Boarnet, Ph.D. Princeton University, *Professor of Planning, Policy, and Design and of Economics*
David Brownstone, Ph.D. University of California, Berkeley, *Department Chair and Professor of Economics*
Jan K. Brueckner, Ph.D. Stanford University, *Professor of Economics*

Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Planning, Policy, and Design; Law; Environmental Health, Science, and Policy; and Management*
Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor Emeritus of Social Sciences*
R. (Jay) Jayakrishnan, Ph.D. University of Texas at Austin, *Associate Professor of Civil and Environmental Engineering*
Wenlong Jin, Ph.D. University of California, Davis, *Assistant Professor of Civil and Environmental Engineering*
Michael McNally, Ph.D. University of California, Irvine, *Professor of Civil and Environmental Engineering and of Planning, Policy, and Design*
Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Professor of Civil and Environmental Engineering*
Amelia C. Regan, Ph.D. University of Texas, Austin, *Professor of Computer Science*
Stephen G. Ritchie, Ph.D. Cornell University, *Director of the Institute of Transportation Studies and Professor of Civil and Environmental Engineering*
Jean-Daniel M. Saphores, Ph.D. Cornell University, *Director of the Transportation Science Program and Associate Professor of Civil and Environmental Engineering, Economics, and Planning, Policy, and Design*
Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor Emeritus of Economics*

Affiliated Faculty

Arthur S. DeVany, Ph.D. University of California, Los Angeles, *Professor Emeritus of Economics*
Amihai Glazer, Ph.D. Yale University, *Professor of Economics*
John D. Houston, Ph.D. University of California, Los Angeles, *Assistant Professor of Planning, Policy, and Design*
Sandra S. Irani, Ph.D. University of California, Berkeley, *Professor of Computer Science*
Raymond W. Novaco, Ph.D. Indiana University, *Professor of Psychology and Social Behavior*
Luis Suarez-Villa, Ph.D. Cornell University, *Professor of Planning, Policy, and Design*
Carole J. Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science and Economics*
Christian Werner, Ph.D. The Free University of Berlin, *Professor Emeritus of Economics*

The graduate program in Transportation Science includes faculty from three academic units: the Department of Civil and Environmental Engineering in The Henry Samueli School of Engineering, the Department of Economics in the School of Social Sciences, and the Department of Planning, Policy, and Design in the School of Social Ecology. The program is designed to educate students in a broad set of competencies and perspectives that mirror the actual practice of current transportation research. The M.S. and Ph.D. degrees in Transportation Science are offered.

Admission

Admission is limited to a small number of exceptionally talented, independent, and self-disciplined students. The deadline for application for admission is March 1 for fall quarter. A second window for application for admission for winter or spring quarters is open from April 15 through June 1 but funding options for this second window may be very limited. All applicants must take the Graduate Record Exam (GRE) prior to the application deadline. Applicants whose first language is not English must also submit Test of English as a Foreign Language (TOEFL) scores.

MASTER OF SCIENCE DEGREE

The M.S. degree program has two options: (1) thesis; and (2) comprehensive examination. Students will choose one of these two options. For both options, no more than 12 credit hours of non-transportation courses can count toward the required number of course-work units. Exceptions must be approved by the student's advisor and the Director of the Transportation Science program. Opportunities are available for part-time study toward the M.S. degree. The normative time for completion of the M.S. is one year, and the maximum time permitted is four years, as part-time status is allowed.

Transportation courses must be chosen from lists in each of the three program areas. Each student must choose (1) at least three graduate courses from *Area 1 (Transportation Systems Engineering)*, and (2) at least one graduate course from each of *Area 2 (Urban and Transportation Economics)* and *Area 3 (Transportation Planning)*, and at least one additional graduate courses from either of these two areas.

Specific courses in each of these areas are shown below (transportation courses are indicated in **bold**):

Area 1 (Transportation Systems Engineering): **CEE220A, CEE221A, CEE222, CEE224A, CEE225A, CEE225B, CEE226A, CEE227A, CEE228A, CEE229A.**

Area 2 (Urban and Transportation Economics): Economics 210A-B, **281A-B, 282A-B, 289A–Z.** NOTE: Economics 281A-B and 282A-B require Economics 210A or consent of the instructor. Students can only count one Economics 289 course toward the required number of units.

Area 3 (Transportation Planning): Planning, Policy, and Design U202, U207, **U212,** U223, **U231, U233,** U235, U237, U238, U242, U244, U252.

Pre-approved upper-division undergraduate courses, independent study units, or seminars:

A. Pre-approved upper-division undergraduate courses: CEE121, CEE122, CEE123, CEE124, CEE125, Economics 105A-B, 123A-B, 149.
B. Independent study units: CEE296, CEE298, CEE299, Economics 299, Planning, Policy, and Design U298, U299.
C. Seminars: Economics 285A-B-C. At most two of these classes may count toward the required units.
D. Students who choose the thesis option may also take up to eight units of CEE296 (4 to12 units) and Planning, Policy, and Design U298 (2 to 4 units).

Substitutions must be approved by the Transportation Science executive committee. Alternatively, students may petition the Director of the Transportation Science program after approval by their advisor.

Plan I: Thesis Option

Students who select the thesis option must complete at least 36 units of study, up to eight of which can be taken in conjunction with the thesis research topic (thesis units should be taken in the home department of the faculty advisor); they must also complete at least 28 units of course work with no more than eight units of pre-approved upper-division undergraduate courses, independent study units, or seminars. The thesis should reflect an original research investigation and it must be approved by a thesis committee of at least three full-time faculty members (a majority of which must be Transportation Science faculty) with primary appointments in at least two of the following departments: Civil and Environmental Engineering, Economics, and Planning, Policy and Design. Thesis research findings must be presented in a public seminar.

Plan II: Comprehensive Examination Option

Students who select the comprehensive examination option must successfully complete 36 units of course work and pass a comprehensive examination. These units may include no more than six units of pre-approved upper-division undergraduate courses, independent study units, or seminars. The comprehensive examination

requirements may be met with a 20-page paper dealing with a transportation topic; this paper must be approved by the student's advisor and the Director of the Transportation Science program.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. degree indicates attainment of an original and significant research contribution to the state-of-the-art in the candidate's field, and an ability to communicate advanced concepts to a non-specialized audience. All students must complete a core curriculum consisting of eight courses from Civil Engineering, Economics, and Social Ecology plus the graduate colloquium. Students may apply to the Director of Enrollment and Graduate Academic Affairs for exemption from specific courses based upon the evidence of prior course work. Students also must successfully complete at least six courses from among the four specialization areas: (1) Methods and Analysis; (2) Transportation Systems Economics; (3) Traffic Analysis; and (4) Planning and Policy Analysis. At least four of these six courses must be from one specialization.

Students must complete the following general theory core courses:

Civil Engineering: CEE220A, CEE225A or CEE225B.

Urban Planning: Planning, Policy, and Design U202 or U212; Planning, Policy, and Design U223 or U242.

Economics: Economics H100A-B, 123A-B, and 282A-B.

Transportation Science: Economics 285A-B-C.

It is expected that all students will have sufficient background in one of the core disciplines to be exempted from some of the courses. Substitutions may be approved by the program director.

In addition to the general theory core courses, students must take at least six additional courses chosen from among the four specialization areas below.

Methods and Analysis Specialization: CEE220B, CEE223, CEE224A-B, CEE225A-B, CEE227A, CEE228A, CEE283; Economics 220A-D, 223A, 224A; Planning, Policy, and Design U206, U223, U237, U238, U242; Social Science 201A-B, 201C; Social Ecology 264A-B, 266A-B.

Transportation Systems Economics Specialization: Economics 210A-B, 241A-B, 281A-B.

Traffic Analysis Specialization: CEE221A-B, CEE226A-B, CEE227A, CEE228A-B, CEE229A-B.

Transportation Planning and Policy Analysis Specialization: CEE222, CEE225A-B, Economics 282A, Planning, Policy, and Design U202, U207, U212, U235, U242, U244, U252, U253, U275.

Other requirements include a replication project, in which students replicate the empirical work of a published paper from a major transportation journal; the qualifying examination, which consists of the oral defense of the student's dissertation proposal; and completion of the dissertation.

The normative time for advancement to candidacy is three years. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Replication Project

Prior to preparing a dissertation proposal, each student who has not completed a master's thesis (or otherwise independently published) must replicate the empirical work of a published paper from a major transportation journal, chosen by the student and approved by the advisor. This replication may involve the collection of new data, the use of better statistical techniques, additional simulations, or the identification and correction of theoretical errors. Through the replication project, students gain direct experience in reducing a general problem to a manageable research project, in using data, and in carrying out a research project.

Qualifying Examination

Upon completion of the general theory core courses, the specialization area courses, and the replication requirements, each student must develop a dissertation proposal defining the research problem, related literature, research methods, and data resources. The Ph.D. qualifying examination consists of an oral defense of that proposal before a candidacy committee chosen according to normal campus regulations, upon the recommendation of the Graduate Director. Typically, this is a committee of at least three members of the Transportation Science faculty and at least one faculty member who is not associated with Transportation Science.

Dissertation Requirement

Following advancement to candidacy, the dissertation is supervised by a doctoral committee ordinarily consisting of at least three members of the candidacy committee, a majority of which must be Transportation Science faculty. The dissertation must demonstrate the student's ability to originate interesting and significant research problems, to investigate such problems both broadly and deeply, and to write scholarly material of publishable quality. Certification of the dissertation will be by the student's doctoral committee. Dissertation research units should be earned in the department selected by the chair of the candidacy committee (e.g., CEE297, Economics 290, or Social Ecology 296).

RESEARCH FACILITIES

UCI is a major research university and has an excellent library collection, as well as special interlibrary loan arrangements with other University of California libraries including the Transportation Library at Berkeley. Research is coordinated with the Irvine branch of the Institute of Transportation Studies (ITS). Approximately 30 to 40 graduate students are employed as research assistants each year in ITS. Research covers a broad spectrum of transportation issues. Current funded research projects focus upon intelligent transportation systems (ITS), particularly advanced transportation management systems; planning and analysis of transportation systems; transportation systems operation and control; transportation engineering; transportation safety; road and congestion pricing; environmental and energy issues and demand for alternative fuel vehicles; public transit operations, transportation-land use interactions, demand for autos, and travel demand.

ITS is part of the University of California Transportation Center, one of ten federally designated centers of excellence for transportation research. The transportation research program at UCI is also supported by the Advanced Transportation Management Systems (ATMS) Laboratories. The Institute maintains a regular publications series documenting research conducted within its programs and is the editorial headquarters of the *Journal of Regional Science.*

SCHOOL OF LAW

Erwin Chemerinsky, **Dean**

General Information: law@uci.edu
http://www.law.uci.edu/

Faculty

Mario Barnes, J.D. University of California, Berkeley; LL.M. University of Wisconsin at Madison, *Professor of Law*
Dan Burk, J.S.M. Stanford Law School, J.D. Arizona State University, *UCI Chancellor's Professor of Law*
Alejandro Camacho, J.D. Harvard Law School, *Acting Professor of Law*
Jennifer Chacón, J.D. Yale Law School, *Professor of Law*
Erwin Chemerinsky, J.D. Harvard Law School, *Dean of the School of Law and UCI Distinguished Professor of Law and Political Science*
Linda R. Cohen, Ph.D. California Institute of Technology, *Associate Dean for Graduate Studies, School of Social Sciences, and Professor of Economics and Law*
Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Law; Planning, Policy, and Design; Environmental Health, Science, and Policy; and Management*
Catherine Fisk, J.D. University of California, Berkeley; LL.M. University of Wisconsin at Madison, *UCI Chancellor's Professor of Law*
Carrie Hempel, J.D. Yale University School of Law, *Associate Dean of Clinical Education and Service Learning Programs, and Clinical Professor of Law*
Trina Jones, J.D. University of Michigan Law School, *Professor of Law*
Stephen Lee, J.D. University of California, Berkeley, *Acting Professor of Law*
Christopher Leslie, J.D. University of California, Berkeley, *Professor of Law*
Elizabeth F. Loftus, Ph.D. Stanford University, *UCI Distinguished Professor of Psychology and Social Behavior; Criminology, Law and Society; Cognitive Sciences; and Law*
Carrie Menkel-Meadow, J.D. University of Pennsylvania, *Professor of Law*
R. Anthony Reese, J.D. Stanford Law School, *UCI Chancellor's Professor of Law*
Ann Southworth, J.D. Stanford Law School, *Professor of Law*
Beatrice Tice, J.D. Stanford Law School, M.L.I.S. University of Washington, *Associate Dean of Library and Information Services and Clinical Professor of Law*
Christopher Tomlins, Ph.D. John Hopkins University, *UCI Chancellor's Professor of Law*
Grace Tonner, J.D. Loyola Law School, *Associate Dean of Lawyering Skills and Clinical Professor of Law*
Kerry Vandell, Ph.D. Massachusetts Institute of Technology, *Professor of Management; Law; and Planning, Policy, and Design*
Henry Weinstein, J.D. University of California, Berkeley, *Clinical Professor of Law and Literary Journalism*

It is anticipated that four additional full-time faculty will be appointed within the School by fall 2010. For up-to-date information on these appointments, please monitor the School's Web site at http://www.law.uci.edu.

OVERVIEW

The School of Law welcomed its inaugural class of students in fall 2009. The School offers the J.D. (Juris Doctor). In addition, joint-degree programs will connect legal education with the wide range of academic and professional opportunities of a major research university. The School emphasizes interdisciplinary studies and encourages dual degrees in many different fields.

Students completing the J.D. degree will be fully prepared for the practice of law based on the ultimate objective of any legal system—the realization of justice. The curriculum, described in further detail below, includes in-depth study of legal doctrine and also provides experiential learning based on clinical practice and the professional training in lawyering skills necessary for the practice of law at the highest level. Every student will have a clinical experience or the equivalent.

The School of Law builds on UCI's existing strengths in emerging technology, social policy, international business, environmental science and policy, health care, and other fields to produce leaders in law, government, and business for the twenty-first century. UCI law graduates are encouraged to pursue careers in public service, including non-governmental organizations and philanthropic agencies. Financial aid and a loan-repayment assistance program will be available to support students interested in these fields. The School will work aggressively to place students in law firms, public interest and legal services offices, and government agencies. A wide array of employers, from both the public and private sectors, have already committed to interview on campus.

The School of Law will seek accreditation from the American Bar Association as soon as possible. That process takes place over a three- to five-year period including an initial application for provisional accreditation for new law schools. (Students and graduates of provisionally approved law schools are entitled to the same recognition given to students and graduates of fully approved law schools. The Law School is eligible for provisional accreditation in 2010 and if it is received, students will be eligible for any bar exam.) The Dean is fully informed as to the Standards and Rules of Procedure for the Approval of Law Schools by the American Bar Association. The administration and the Dean are determined to devote all necessary resources and in other respects to take all necessary steps to present a program of legal education that will qualify for approval by the American Bar Association. The School of Law makes no representation to any applicant that it will be approved by the American Bar Association prior to the graduation of any matriculating student.

The School of Law seeks to enroll outstanding students who reflect a wide diversity of life experiences. The initial students will receive a top-quality legal education and also have the chance to participate in the shaping of an exciting new institution. Further information about admission requirements, application deadlines, fee levels, and curriculum developments will be updated regularly on the School's Web site at http://www.law.uci.edu/.

Degree

Law ..... J.D.

JURIS DOCTOR (J.D.) REQUIREMENTS

Graduation Requirements

To earn the Juris Doctor, students must complete six semesters of study, earn 86 law semester credits, pass all required classes, complete the required writing project, and have a minimum 2.0 (C) grade point average.

All students must complete at least 68 credits in regularly scheduled Law School classes. "Regularly scheduled Law School classes" include:

Law School courses and seminars, including courses cross-listed at the Law School but originating in another school or department at the University.

Law School clinics and clinical placements approved by the Associate Dean for Clinical Education and Service Learning.

Credits from another ABA-approved law school or from approved study in a foreign exchange program.

Regularly scheduled Law School classes do not include:

Independent study work.

Non-law classes.

Research tutorials.

Externships (other than those deemed to meet the Law School's clinical requirement).

First-Year Course Work Requirements

Students must pass all UCI Law School first-year courses, or their substantial equivalents, with grades of 2.0 (C) or higher. The Assistant Dean for Student Services will determine whether classes taken at another law school are sufficient for transfer students to meet the UCI first-year course work requirement. If not, the student will be notified which courses are needed to complete the requirement.

Upper-Level Academic Requirements

1. Writing Requirement

Students must complete at least one course where they are required to produce a major writing project with frequent feedback from a faculty member. This might include seminars, independent studies, or other work, so long as it involves substantial original analysis and research, multiple drafts, and is certified by the faculty members as meeting this requirement.

At the completion of the first-year lawyering skills course, students will have a meeting with their professor and receive advice on the type of writing assistance they need and approaches they should consider in meeting the upper-level writing requirement.

Students are strongly encouraged to develop a portfolio over the course of law school that will include all of their major written work and other forms of presentation.

2. Clinical Requirement

All students are required to complete at least one semester of clinical education, either in a Law School clinic or at a clinical placement that is approved by the Associate Dean of Clinical Education and Service Learning. This shall involve a live client or other real-life practical experience, appropriately supervised and designed to encourage reflection by students on their experiences and on the values and responsibilities of the legal profession, and the development of one's ability to assess his or her performance and level of competence.

CURRICULUM

FIRST-YEAR CURRICULUM

The UCI School of Law will have an innovative curriculum designed to prepare students for the practice of law at the highest levels of the profession. The first-year curriculum will teach students areas of legal doctrine traditionally taught in the first year, but in an innovative way that focuses on teaching methods of legal analysis and skills that all lawyers constantly use.

Students thus will receive an education that includes the traditional areas of legal doctrine, but in an innovative context designed to prepare them for practice in the twenty-first century. Many other features of the first year will be designed to prepare students for the practice of law. All first-year students will be assigned a lawyer mentor and will be required to spend a specified number of hours observing that lawyer at work.

There will be an active pro bono program where students will have the opportunity to do volunteer work in many different contexts beginning in their first year. Also, as members of the inaugural class, students will be actively engaged in helping to create the institutions of the new Law School.

All first-year students will enroll in the courses below.

FALL SEMESTER

Law 500 Common Law Analysis: Private Ordering (4). This course will focus primarily on the common law of contracts to teach this method of analysis, in which the law is derived from judicial decisions rather than statutes or the Constitution.

Law 503 Statutory Analysis (3). This course will use criminal law as a basis for teaching students the methods employed in all areas of law for analyzing statutes.

Law 504 Procedural Analysis (4). This course will use civil procedure as the foundation for teaching students about areas of law in which there are procedural rules, and how analysis and arguments are made in such contexts.

Law 506A Lawyering Skills I (3). This course, which will be part of both semesters, will focus on teaching skills that all lawyers use, such as fact investigation, interviewing, legal writing and analysis, legal research, negotiation and oral advocacy.

Law 507A Legal Profession I (2). This course, which will be part of both semesters, is designed to prepare students to chart rewarding and responsible careers in law. Drawing from various disciplines, including economics, history, sociology, and psychology, we will teach students about the variety of practice settings in which lawyers work and the professional opportunities and challenges of each. (Full description available at http://www.law.uci.edu/registrar/curriculum.html.)

SPRING SEMESTER

Law 501 Common Law Analysis: Public Ordering (4). This course will use torts as a way of further examining the common law, and how lawyers reason and develop arguments in this area.

Law 502 Constitutional Analysis (4). This course will teach students basic areas of constitutional law such as separation of powers, federalism, and individual liberties. It will focus on how constitutional arguments are made, and how courts and lawyers analyze constitutional issues.

Law 505 International Legal Analysis (3). This course will introduce students to international law and the ways that analyses in this area are similar to and different from analysis in other areas of law.

Law 506B Lawyering Skills II (3). In the spring semester of this two-semester course, all students will have gained experience in a legal clinic setting, where they will conduct intake interviews of actual clients for the Legal Aid Society of Orange County.

Law 507B Legal Profession II (2). Continuation of fall semester course.

UPPER-LEVEL COURSES

Below is an overview of the upper-level courses taught at UC Irvine School of Law. Not every course will be offered each year, and additional courses not listed may be offered. Course descriptions, content, and requirements are subject to change.

GENERAL COURSES

Administrative Law. The law concerning agencies, especially in the federal government, and the procedures for their rule-making and adjudications, and for review of their decisions.

Business Associations. This is the foundational course in the law of corporations and partnerships.

Constitutional Law: First Amendment. An advanced constitutional law course examining the Constitution's protections for speech and religion.

Criminal Procedure. The constitutional provisions concerning criminal investigation—the Fourth, Fifth and Sixth Amendments—and the rules that they create are examined.

Evidence. The law concerning what matters are admissible in court and how issues are proven before judges and juries.

Federal Courts. An advanced course in constitutional law and procedure which examines when federal courts may exercise jurisdiction and provide relief.

Federal Income Taxation. The basic course in the law concerning the federal taxation of individuals.

Property. The law concerning when people may own, use, and sell property, and how this is regulated by law.

Remedies. A study of the relief that courts can provide, including the availability of injunctive relief and how damages are determined.

BUSINESS LAW

Accounting for Lawyers. Instruction in basic accounting principles that benefit attorneys.

Antitrust. Consideration of American antitrust laws which prevent monopolies and excessive market controls.

Banking Law. Principles of commercial law and laws regulating banking in the United States.

Bankruptcy Law. An examination of federal laws concerning the availability and procedures for bankruptcy filings by individuals and corporations.

Business and Economics of Law Firm Practice. An examination of the economics of law firms and how they operate.

Commercial Transactions. The law of commercial paper, as regulated by the Uniform Commercial Code, is examined.

Corporate Finance. An advanced course in the financing and structuring of corporations and corporate transactions.

Insurance Law. The federal and state laws regulating insurance companies are considered.

Securities Regulation. An examination of the federal laws regulating the issuance of stock and other securities.

EMPLOYMENT LAW

Employment Discrimination Law. The focus is on federal laws limiting employment discrimination based on race, gender, and religion.

Employment Law. Consideration of many topics that control the employer—employee relationship, including termination, wage and hours, workplace safety and employees' rights.

Labor Law. An examination of the major federal statutes concerning the process of unionization and the rights of employees and employers.

ENTERTAINMENT LAW

Entertainment Law. Consideration of basic principles of law that arise in the entertainment industry and representation of individual or entity clients.

Sports Law. Consideration of basic principles of law that arise in working in the area of sports law.

FAMILY LAW

Children and the Law. Legal issues concerning the rights of children in many different institutional settings.

Community Property. An examination of the law of marital assets and the rights of spouses to property acquired during the marital relationship.

Family Law. The law concerning matters such as marriage, divorce, support, child custody and parental rights.

Gifts, Wills, and Trusts. The law of inheritance and the various ways in which it is conveyed and regulated.

INTELLECTUAL PROPERTY

Copyright Law. The course will examine the federal law concerning when material can be copyrighted, and the protections that provides.

Intellectual Property. The basic course in this area is a survey of the law and the foundation for advanced courses such as copyright, patent and trademark law.

Patent Law. The course will examine the federal law concerning when inventions can be patented and the protections that provides.

Trademark and Unfair Competition Law. The course will examine the federal and state laws concerning trademark and unfair competition, and the protection they provide.

INTERNATIONAL AND COMPARATIVE LAW

China Law. An examination of the legal system and practices in China.

Comparative Law. An examination of how different legal systems treat basic issues of law.

International Business Transactions. The course will examine the law and practice of international business.

International Environmental Law. Increasingly, environmental problems are international in nature; this course will look at the law dealing with this issue.

International Human Rights Law. Consideration of treaties, statutes and norms that protect human rights.

International Trade Law. An examination of the treaties, statutes and practices that govern trade among nations.

Islamic Law. An examination of the principles and dictates of Islamic law.

Japanese Law. An examination of the legal system and practices in Japan.

Jewish Law. An examination of the principles and dictates of Jewish law.

Korean Law. An examination of the legal system and practices in South Korea.

LAW AND MEDICINE

Biomedical Ethics. The course will consider the many ethical issues which arise in the practice of medicine and delivery of medical services.

Health Care Law. The course will examine legal issues arising in the provision and delivery of medical care.

PERSPECTIVE COURSES

American Legal History. An examination of key topics in the legal history of the United States.

Critical Race Theory. An examination of the scholarship and perspectives developed by those examining race and American law from a critical perspective.

Feminist Jurisprudence and the Law. An examination of the scholarship and perspectives developed by those examining gender and American law from a critical perspective.

Jurisprudence. A consideration of selected topics in the philosophy of law.

Law and Economics. Economic analysis is a powerful tool for understanding diverse areas of law, and this course will consider the theory and application of law and economics.

Law and Literature. An examination of the relationship between law and literature, including an examination of key works of literature concerning the legal system.

PROCEDURAL COURSES

Arbitration. An examination of the law and practice concerning arbitration as a way of resolving civil disputes.

Complex Litigation. Complex litigation, such as class-action suits and multi-district litigation, is governed by law and rules which are considered in this course.

Conflicts of Law. When legal issues arise involving more than one state or country, conflicts of law principles decide what law is to be applied.

Dispute Resolution. An examination of the law and practice of methods of resolving disputes as alternatives to court adjudication.

PUBLIC LAW

Civil Rights Law. The course will consider the federal laws concerning protection of civil liberties and civil rights, especially concerning the ability to sue governments and government officers, including the availability of suits, the limitations and the remedies available.

Education Law. Education law in the United States is governed by a complex set of constitutional and statutory law which is examined in this course.

Election Law. The law of the political process, including matters such as voting rights and campaign finance law, are examined.

Environmental Law. A survey of federal statutes regulating and protecting the environment, including in areas such as air and water quality.

Immigration Law. The course will examine the federal law regulating immigration and immigrants' rights.

Legislation. An examination of the legislative process and the law governing its operation.

Local Government Law. The course will study the body of law that governs the operation of local government entities in the United States.

Media Law. A consideration of the constitutional, statutory and tort law principles concerning protections for the media, regulation of the media, and when the media can be held liable.

National Security Law. The law governing the actions the United States can take to safeguard national security, and how this is balanced against civil liberties, is considered in this course.

Natural Resources Law. An examination of the law in the United States protecting water, land and other natural resources.

Poverty Law. The course will consider legal issues affecting the poor and the law that has developed concerning them.

White Collar Crime. A consideration of the law and the issues that arise in prosecuting and defending those accused of white collar crimes.

REAL ESTATE LAW

Land Use Law. The ability to develop and use land is governed by a complex body of law which is examined in this course.

Real Estate Transactions. An examination of the law and practice of real estate transactions.

SKILLS COURSES

Advanced Legal Research. Building on the instruction students receive in their first-year courses, this class will teach additional skills in legal research using a variety of tools and sources.

Advanced Legal Writing. The course will focus on developing additional writing skills expanding on the instruction that all students receive in their first year of law school.

Appellate Advocacy. The course will focus on teaching students about the appellate process and will include writing a brief and arguing a simulated appeal.

Negotiations. The course will provide in-depth instruction on the theory and practice of negotiations.

Spanish for Lawyers. A course in Spanish which will focus on language needs for lawyers working with Spanish-speaking clients.

Trial Advocacy. The course will focus on teaching the skills of trying a case —such as opening statements, direct and cross examination and closing arguments—and will include mock trials in which all students will participate.

TAX LAW

Corporate Tax. The law concerning the taxation of corporations will be examined.

Estate and Gift Taxation. The law concerning the taxation of estates and gifts will be considered.

Partnership Tax. The course will consider the law concerning when partnerships and similar business entities can be taxed.

SCHOOL OF PHYSICAL SCIENCES

John C. Hemminger, **Dean**

134 Rowland Hall
Academic Counseling: (949) 824-6507
http://www.physsci.uci.edu/

The School of Physical Sciences offers both professional training and general education in the Departments of Chemistry, Earth System Science, Mathematics, and Physics and Astronomy. The faculty, active in research and graduate education, are at the same time vitally concerned with undergraduate teaching. Curricula of the School are designed to meet the needs of a wide variety of students ranging from those with little technical background who seek insight into the activities and accomplishments of physical scientists to those seeking a comprehensive understanding that will prepare them for creative research in physical science.

Over the course of the past century and a half, physics, chemistry, and mathematics have evolved into interdependent but separate intellectual disciplines. This development is reflected in the departmental structure of the School of Physical Sciences. In the same period, these fundamental disciplines have moved into domains of abstraction unimagined by early scientists. This trend to abstraction with its concomitant increase in understanding of the physical universe provides the major challenge to the student of the physical sciences. Mathematics, physics, and chemistry, while providing the foundation of the technology that dominates contemporary civilization, underlie to an ever-increasing extent the new developments in the biological and social sciences. Earth system science is grounded in the traditional physical sciences while breaking new paths in the quantitative study of changes in the global environment.

DEGREES

Chemistry	B.S., M.S., Ph.D.
Earth and Environmental Sciences	B.S.
Earth and Environmental Studies	B.A.
Earth System Science	M.S., Ph.D.
Mathematics	B.S., M.S., Ph.D.
Physics	B.S., M.S., Ph.D.

Honors

Criteria used by the School of Physical Sciences in selecting candidates for honors at graduation are as follows: Approximately 1 percent will be awarded *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude.* Honors are awarded on the basis of a student's performance in research, cumulative grade point average, and performance in upper-division courses in the major. Students considered for honors at graduation must have completed 72 units in residence at the University of California. The student's cumulative record at the end of the final quarter is the basis for all decisions regarding honors at graduation. Other important factors are considered (see page 52). The School of Physical Sciences also grants special honors to students who have distinguished themselves by their work in their major subject.

Undergraduate Programs

Each department offers courses that are of value to nonmajors and majors in the sciences. The programs for majors are designed to meet the needs of students planning careers in business, education, or industry; of students planning advanced professional study; and of students planning graduate work that continues their major interest. Students who wish to complete a coordinated set of courses beyond the introductory level in Mathematics and in Earth and Atmospheric Sciences may pursue minors in these areas. Introductory courses in chemistry, mathematics, and physics meet the needs of students majoring in the sciences, mathematics, and engineering and are also appropriate for students in other disciplines who seek a rigorous introduction to the physical sciences. In addition, a number of courses within the School have few or no prerequisites and are directed particularly toward students majoring in areas remote from the sciences.

PLANNING A PROGRAM OF STUDY

Students who choose a major in the School of Physical Sciences have a variety of academic advising and counseling resources available to them. In addition to faculty advisors, there is a Chief Academic Advisor in each department who is responsible for interpreting degree requirements, reviewing student petitions, and assisting with special advising problems. An academic advising and counseling staff, employed in the Associate Dean's Office, is available to serve a broad range of student advising needs. In consultation with their faculty advisor or an academic counselor, students should plan a course of study leading to a major in one of the departments of the School. In carrying out this major, students may often concentrate very heavily in a second department within the School or in some other school. Occasionally students choose to pursue a double major. Permission to do so may be sought by a petition submitted to the Office of the Associate Dean of Physical Sciences.

All initial courses of study for majors include mathematics through calculus, and calculus is a prerequisite for much of the upper-division work in each major. A student interested in any of the physical sciences should continue mathematical training beyond these prerequisite courses. Furthermore, students interested in either physics or chemistry usually will include work in both of these subjects in their undergraduate careers.

Students in the physical sciences are urged to acquire a working knowledge of computer programming at an early stage of their University studies. This can be accomplished by taking Information and Computer Science 21, Chemistry 5, Engineering EECS10, EECS12, MAE10, or Physics 53.

CAREER OPPORTUNITIES

The majority of graduates continue their education beyond the Bachelor's degree level. Many pursue advanced academic degrees in preparation for careers in scientific or medical research, engineering, or postsecondary education. Other students will complete a secondary education credential in order to prepare for careers teaching high school mathematics and science. Some students enter professional school in areas such as medicine, dentistry, law, or business administration. Students who choose not to continue their studies beyond the baccalaureate level most frequently find employment in private business or industry. In addition to technical areas directly related to their major fields of study, students often enter careers in less obviously related fields such as computing, systems analysis, engineering, journalism, marketing, or sales.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

PREPARATION FOR TEACHING SCIENCE AND MATHEMATICS

Option 1: Earn a Bachelor's Degree, Education Concentration, and Teaching Credential

Physical Sciences students who are interested in pursuing a teaching career should consider the UCI Cal Teach Science and Mathematics Program. This program offers Chemistry, Earth and Environmental Sciences, Earth and Environmental Studies, Mathematics, and Physics majors an option to earn their bachelor's degree concurrently with a California Preliminary Single Subject Teaching Credential. Individuals who hold this credential are authorized to teach science (chemistry, geosciences, or physics) or math in a middle school or high school.

Students complete the degree requirements for their selected major, the requirements for an optional education concentration offered by the same department, and any additional teacher credentialing course requirements that are not included in the major or the concentration. The following courses are required for the Preliminary Single Subject Teaching Credential: Physical Sciences 5, Physical Sciences 105, Physics 193 or Chemistry 193, Mathematics 8 (for mathematics credential candidates only), Logic and Philosophy of Science 60, Education 55, 109, 143A, 143B, 148, and two quarters of Education 158. Beyond course work, some additional requirements for teacher certification are described below.

With careful, early planning, it is possible for students to complete their bachelor's degree and teacher certification in four years. This is a more time-efficient and cost-effective route than the traditional five-year teacher preparation model, which usually involves a full academic year of teacher education courses and clinical teaching experience after completion of a bachelor's degree.

After the School of Physical Sciences verifies the completion of all requirements for the bachelor's degree and education concentration, students are awarded their degree from UC Irvine. The Preliminary Single Subject Teaching Credential is awarded by the California Commission on Teacher Credentialing (CTC) upon completion of a bachelor's degree and the state-approved UCI teacher education program, which combines course work, student teaching, and a teaching performance assessment. The UCI Department of Education must verify completion of all requirements for the teaching credential and then recommend that the credential be awarded to a candidate by the CTC.

Additional Requirements for Teacher Certification. In addition to the required course work for a California Preliminary Single Subject Teaching Credential, the following additional requirements must be satisfied:

A. The School of Physical Sciences requires a *cumulative* GPA of 2.0 (C) to graduate with the bachelor's degree. However, students must earn a grade of C or better in each of the following courses in order to be recommended for the Preliminary Single Subject Credential: Physical Sciences 105, Education 55, 143A, 143B, 148, 109, and 158.

B. The following must be completed and verified prior to the start of student teaching in Education 158:

1. Pass the California Basic Education Skills Test (CBEST), a basic mathematics and literacy skills test. For more information, see http://www.cbest.nesinc.com/.
2. Pass the California Subject Exam for Teachers (CSET) in the discipline in which a candidate plans to earn a Preliminary Single Subject Credential (chemistry, geosciences, mathematics, or physics). Although secondary teachers are only required to pass the CSET exam in one discipline, those who pass the CSET exam in more than one disciplinary field (e.g., physics and mathematics) can be authorized to teach classes in each of those disciplines. For more information about the CSET exam, see http://www.cset.nesinc.com/. Mathematics majors have an option to waive the CSET exam by completing prescribed course work, referred to as a subject-matter preparation program (SMPP). More information about the Mathematics SMPP is available at http://www.gse.uci.edu/academic_programs/ap_smpp_math.php.
3. Secondary school science teachers in California are expected to have a broad range of general science knowledge in additional to their discipline of specialization, because their Single Subject Teaching Credential in one of the sciences also authorizes them to teach classes in general or integrated science. The general science subtests of the CSET exam cover foundational topics in astronomy, geodynamics, Earth resources, ecology, genetics and evolution, molecular biology and biochemistry, cell and organismal biology, waves, forces and motion, electricity and magnetism, heat transfer and thermodynamics, and structure and properties of matter. Although students can prepare for the CSET exam's general science subtests through independent study, Physical Sciences students can also prepare themselves by taking lower-division courses that cover this content. Some suggested courses include Biological Sciences 1A or 93 and 94; Biological Sciences 98; Chemistry 1A-B-C; Earth System Science 1 and 7, and Physics 20A.
4. Obtain a Certificate of Clearance from the State of California.
5. Obtain a TB test with negative results.

C. The following must be completed and verified before the Department of Education is able to recommend an individual for the Preliminary Single Subject Credential:

1. Complete a college-level course or pass an examination on the U.S. Constitution. Political Science 21A satisfies this requirement. Contact the UCI Department of Education Student Affairs Office for information about the exam.
2. Obtain a CPR certificate in adult, child, or infant training.

Declaring Intention to Complete the Concentration and Teacher Certification. Prospective teachers who want to complete their degree and a teaching credential in four years are encouraged to start planning early by reviewing the sample programs for the major and the education concentration that they have selected, and to consult with an academic counselor. Interested students are encouraged to get started on the suggested first- and second-year credentialing course work, including Physical Sciences 5 and 105, and can do so without officially declaring their intention to complete the concentration or the credential. However, students must declare their intention to complete the optional education concentration and their intention to earn the Preliminary Single Subject Teaching Credential by the end of their second year at the latest, and prior to enrolling in Education 55, which they would typically take in fall of their third year. Forms for declaring a selected education concentration and for declaring an intention to complete the teaching credential are available in the Physical Sciences Student Affairs Office (134 Rowland Hall) or in the Cal Teach Science and Mathematics Resource and Advising Center (137 Biological Sciences Administration).

Option 2: Earn a Bachelor's Degree and Education Concentration or Specialization

A second option for students interested in teaching science and mathematics is to earn a teaching credential in a post-baccalaureate teacher preparation program *after* completing their bachelor's degree. UCI and other universities offer such programs, which typically require one academic year of education course work and

clinical teaching experience. The Departments of Chemistry, Mathematics, and Physics and Astronomy offer the concentration in Chemistry Education, the specialization in Mathematics for Education, and the concentration in Physics Education, repectively, which are well suited for undergraduates who plan to pursue a teaching credential after finishing their degree. These programs offer strong grounding in the fundamentals of one discipline, and at the same time, emphasize the breadth in natural sciences needed by secondary science teachers. Each department's curriculum includes introductory courses on effective methods of science and mathematics teaching and provides opportunities for practical fieldwork experiences in a secondary school classroom. Detailed requirements for each program are provided in the departmental sections.

SPECIAL PROGRAMS

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. See the Center for International Education section for additional information.

Minor in Biomedical Engineering

The minor in Biomedical Engineering is an interdisciplinary curriculum that includes courses from the Schools of Engineering, Physical Sciences, and Biological Sciences. The minor is designed to provide a student in the physical sciences with the introductory skills needed in the quantitative biomedical arena. See The Henry Samueli School of Engineering section of the *Catalogue* for more information.

Minor in Conflict Resolution

The interdisciplinary minor in Conflict Resolution provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels. See the School of Social Sciences section of the *Catalogue* for more information.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of the *Catalogue* for more information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements: Refer to individual departments.

Graduate Programs

The School offers M.S. and Ph.D. degree programs in the Departments of Chemistry, Earth System Science, Mathematics, and Physics and Astronomy.

DEPARTMENT OF CHEMISTRY

1120 Natural Sciences II; (949) 824-6018
Donald. R. Blake, **Department Chair**

Faculty

Ioan Andricioaei, Ph.D. Boston College, *Assistant Professor of Chemistry* (computational, physical, and theoretical chemistry, chemical biology, and chemical physics)

V. Ara Apkarian, Ph.D. Northwestern University, *Professor of Chemistry* (physical chemistry and chemical physics)

Ramesh D. Arasasingham, Ph.D. University of California, Davis, *Lecturer with Security of Employment, Chemistry* (chemical education and inorganic chemistry)

Donald R. Blake, Ph.D. University of California, Irvine, *Department Chair and Professor of Chemistry, and Professor of Earth System Science* (atmospheric, analytical, environmental chemistry, and radiochemistry)

Suzanne A. Blum, Ph.D. University of California, Berkeley, *Assistant Professor of Chemistry* (inorganic, organic, and organometallic chemistry)

Andrew S. Borovik, Ph.D. University of North Carolina, Chapel Hill, *Department Vice Chair and Professor of Chemistry* (inorganic, organometallic, organic, polymer, materials and nanoscience chemistry, and chemical biology)

David A. Brant, Ph.D. University of Wisconsin, *Professor Emeritus of Chemistry* (physical chemistry of biological macromolecules)

Kieron Burke, Ph.D. University of California, Santa Barbara, *Professor of Chemistry and Physics* (theoretical and computational chemistry, physical chemistry, and chemical physics)

A. Richard Chamberlin, Ph.D. University of California, San Diego, *Department Chair and Professor of Pharmaceutical Sciences, and Professor of Chemistry and Pharmacology* (organic synthesis and chemical biology)

Robert M. Corn, Ph.D. University of California, Berkeley, *Professor of Chemistry and Biomedical Engineering* (analytical, materials, nanoscience, physical and polymer chemistry, chemical biology, and chemical physics)

Robert J. Doedens, Ph.D. University of Wisconsin, *Professor Emeritus of Chemistry* (structural inorganic and organometallic chemistry)

Kimberly Edwards, Ph.D. University of California, Irvine, *Lecturer with Security of Employment, Chemistry* (general chemistry)

William J. Evans, Ph.D. University of California, Los Angeles, *Professor of Chemistry* (synthetic inorganic and organometallic chemistry)

Barbara J. Finlayson-Pitts, Ph.D. University of California, Riverside, *Director of AirUCI and UCI Distinguished Professor of Chemistry* (atmospheric, analytical, environmental and physical chemistry, and chemical physics)

Fillmore Freeman, Ph.D. Michigan State University, *Professor of Chemistry* (computational, organic, and theoretical chemistry)

Filipp Furche, Ph.D. University of Karlsruhe, *Associate Professor of Chemistry* (computational, materials, nanoscience, physical, polymer and theoretical chemistry, and chemical physics)

Nien-Hui Ge, Ph.D. University of California, Berkeley, *Associate Professor of Chemistry* (analytical and physical chemistry, and chemical physics)

R. Benny Gerber, Ph.D. Oxford University, *Professor of Chemistry* (atmospheric, computational, environmental, physical and theoretical chemistry, and chemical physics)

Zhibin Guan, Ph.D. University of North Carolina at Chapel Hill, *Professor of Chemistry and Biomedical Engineering* (materials, nanoscience, organic and polymer chemistry, and chemical biology)

Stephen Hanessian, Ph.D. Ohio State University, *Director of the Graduate Program in Medicinal Chemistry and Pharmacology, and Professor of Pharmaceutical Sciences, Pharmacology, and Chemistry* (organic chemistry)

Warren J. Hehre, Ph.D. Carnegie-Mellon University, *Professor Emeritus of Chemistry* (theoretical chemistry)

John C. Hemminger, Ph.D. Harvard University, *Dean of the School of Physical Sciences and Professor of Chemistry* (analytical, atmospheric, environmental, materials, nanoscience, physical, polymer, and surface chemistry, and chemical physics)

Alan F. Heyduk, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Chemistry* (inorganic and organometallic chemistry, and chemical biology)

Wilson Ho, Ph.D. University of Pennsylvania, *Donald Bren Professor of Physics and Chemistry* (experimental condensed matter physics, materials, nanoscience, physical and polymer chemistry)

Kenneth C. Janda, Ph.D. Harvard University, *Associate Dean of the School of Physical Sciences and Professor of Chemistry* (analytical, atmospheric, environmental and physical chemistry, spectroscopy, and chemical physics)
Elizabeth R. Jarvo, Ph.D. Boston College, *Assistant Professor of Chemistry* (inorganic, organic, and organometallic chemistry)
Susan M. King, Ph.D. Massachusetts Institute of Technology, *Senior Lecturer in Chemistry* (organic chemistry)
Matthew Law, Ph.D. University of California, Berkeley, *Assistant Professor of Chemistry* (analytical, inorganic, materials, nanoscience, physical and polymer chemistry, and chemical physics)
Vladimir A. Mandelshtam, Ph.D. Institute of Spectroscopy, Academy of Sciences of the U.S.S.R., *Professor of Chemistry* (computational, physical and theoretical chemistry, and chemical physics)
Craig C. Martens, Ph.D. Cornell University, *Professor of Chemistry* (computational, materials, nanoscience, physical, polymer and theoretical chemistry, and chemical physics)
Rachel W. Martin, Ph.D. Yale University, *Assistant Professor of Chemistry and of Molecular Biology and Biochemistry* (analytical and physical chemistry, chemical biology, and chemical physics)
Robert T. McIver, Jr., Ph.D. Stanford University, *Professor Emeritus of Chemistry* (physical and analytical chemistry)
George E. Miller, D. Phil. Oxford University, *Senior Lecturer with Security of Employment Emeritus and Reactor Supervisor* (analytical and radioanalytical chemistry, and chemical education)
Harold W. Moore, Ph.D. University of Illinois, *Department Vice Chair and Professor Emeritus of Chemistry* (organic chemistry and rational drug design)
Shaul Mukamel, Ph.D. Tel-Aviv University, *UCI Chancellor's Professor of Chemistry* (analytical, computational, materials, nanoscience, physical, polymer, and theoretical chemistry, and chemical physics)
Serguei A. Nizkorodov, Ph.D. University of Basel, Switzerland, *Associate Professor of Chemistry* (atmospheric, analytical, environmental and physical chemistry, and chemical physics)
James S. Nowick, Ph.D. Massachusetts Institute of Technology, *Professor of Chemistry* (organic, polymer, materials and nanoscience chemistry, and chemical biology)
Larry E. Overman, Ph.D. University of Wisconsin, *UCI Distinguished Professor of Chemistry* (inorganic, organic and organometallic chemistry, and chemical biology)
Reginald M. Penner, Ph.D. Texas A & M University, *Director of the Center for Solar Energy and Professor of Chemistry* (analytical, materials, nanoscience, physical, and polymer chemistry, and chemical physics)
Eric O. Potma, Ph.D. University of Groningen, *Assistant Professor of Chemistry* (analytical and physical chemistry, chemical biology, and chemical physics)
Thomas L. Poulos, Ph.D. University of California, San Diego, *UCI Chancellor's Professor of Molecular Biology and Biochemistry, Pharmaceutical Sciences, Physiology and Biophysics, and Chemistry* (inorganic/organic chemistry)
Jennifer Prescher, Ph.D. Stanford University, *Assistant Professor of Chemistry* (chemical biology)
Peter M. Rentzepis, Ph.D. Cambridge University, *Professor of Chemistry and of Electrical Engineering and Computer Science, and UC Presidential Chair* (physical chemistry, chemical physics, and picosecond spectroscopy)
F. Sherwood Rowland, Ph.D. University of Chicago, *Donald Bren Research Professor Emeritus of Chemistry and Earth System Science* (atmospheric, analytical and environmental chemistry, and radiochemistry)
Scott D. Rychnovsky, Ph.D. Columbia University, *Professor of Chemistry* (organic chemistry)
A. J. Shaka, Ph.D. Oxford University, *Department Vice Chair and Professor of Chemistry* (analytical and physical chemistry, chemical biology, and chemical physics)
Kenneth J. Shea, Ph.D. Pennsylvania State University, *Professor of Chemistry and of Chemical Engineering and Materials Science* (analytical, materials, nanoscience, organic, and polymer chemistry)
Mare Taagepera, Ph.D. University of Pennsylvania, *Senior Lecturer with Security of Employment Emerita* (physical organic chemistry and chemical education)
Douglas J. Tobias, Ph.D. Carnegie Mellon University, *Department Vice Chair and Professor of Chemistry* (computational biophysical chemistry)
Shiou-Chuan (Sheryl) Tsai, Ph.D. University of California, Berkeley, *Associate Professor of Molecular Biology and Biochemistry, Chemistry, and Pharmaceutical Sciences* (organic chemistry and chemical biology)
Christopher D. Vanderwal, Ph.D. Scripps Research Institute, *Assistant Professor of Chemistry* (organic chemistry)
David L. Van Vranken, Ph.D. Stanford University, *Professor of Chemistry* (organic chemistry and chemical biology)
Gregory A. Weiss, Ph.D. Harvard University, *Professor of Chemistry and of Molecular Biology and Biochemistry* (organic chemistry and chemical biology)
Keith A. Woerpel, Ph.D. Harvard University, *Professor of Chemistry* (organic and organometallic chemistry)
Max Wolfsberg, Ph.D. Washington University, *Professor Emeritus of Chemistry* (computational, physical and theoretical chemistry, and chemical physics)
Albert Yee, Ph.D. University of California, Berkeley, *Professor of Chemical Engineering and Materials Science, Biomedical Engineering, and Chemistry*

Undergraduate Program

The major in Chemistry is elected by students planning careers in the chemical sciences and frequently also by those whose interests lie in biology, medicine, earth sciences, secondary education, business, and law. The curriculum of the Department is designed to satisfy the diverse needs of these students and others who may have occasion to study chemistry. The year course Chemistry 1A-B-C (or the Honors sequence Chemistry H2A-B-C) is prerequisite to all study in the Department at more advanced levels. The subject matter of this course serves also as a thorough introduction to the varied aspects of modern chemistry for students who do not wish to pursue their studies beyond the introductory level.

One year of high school chemistry is strongly recommended for enrollment in Chemistry 1A. Refer to the Guidelines for General Chemistry course placement located on the Testing Office Web site at http://www.testingcenter.uci.edu/index.html. A preparatory course, Chemistry 1P, is offered in summer and fall for those who have not taken a high school chemistry course, or who need additional preparation prior to entering Chemistry 1A. A grade of C- or better in Chemistry 1P automatically qualifies the student for Chemistry 1A.

Completion of a one-year sequence in organic chemistry, either Chemistry 51A-B-C or H52A-B-C, is required for Chemistry majors and for students of the life sciences. Certain advanced courses required of Chemistry majors may also be of interest to others.

The undergraduate program of the Chemistry Department emphasizes close contact with research. Chemistry majors are urged to engage in research or independent study under the direction of a faculty member. Information describing the procedures for arranging an undergraduate research opportunity is available on the Chemistry Department Web site at http://www.chem.uci.edu/undergrad.

Much of the important chemical literature is being and has been printed in foreign languages, principally German, Russian, Japanese, Chinese, and French. Reading competence in one or more of these languages is desirable, and Chemistry majors are encouraged to acquire this competence.

Chemistry majors who are interested in teaching chemistry at the secondary level are urged to consider completing the optional concentration in Chemistry Education. A two-year post-baccalaureate program for the M.S. in Chemistry and a California Secondary Teaching Credential is described in the Chemistry Graduate Program section. Chemistry majors who plan subsequent study in medical, dental, or other professional schools should request information concerning admission requirements directly from the schools which they seek to enter. Counseling about preparation for a career in the health sciences is provided by the health science advisors in the School of Biological Sciences. Those intending to pursue graduate studies in chemistry should discuss their plans with a faculty member no later than the fall quarter of their senior year.

Admission to the Major

Students may be admitted to the Chemistry major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office and at http://www.changeofmajor.uci.edu. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of general chemistry with laboratory and one year of approved calculus.

REQUIREMENTS FOR THE B.S. DEGREE IN CHEMISTRY

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements

Basic Requirements: Mathematics 2A-B-D, Physics 7C-D-E and 7LC-LD (or 7B-D-E and 7LB-LD), Chemistry 1A-B-C and M2LA-LB-LC (or H2A-B-C and H2LA-LB-LC), Chemistry 5, Chemistry 51A-B-C and 51LA-LB-LC (or H52A-B-C and H52LA-LB-LC), Chemistry 107 and 107L, Chemistry 131A-B-C (or 130A-B-C), Chemistry 151 and 151L.

Elective Requirements: At least five electives from the following lists, including at least two courses selected from the lecture list and two courses selected from the laboratory list. *Lectures:* Chemistry 125, 127, 128, 135, 137, 138, 177; and Chemistry courses numbered 201–205, 213–249, 262, 271, and 272; Biological Sciences 98 (Biochemistry), 99 (Molecular Biology); Earth System Science 122 (Atmospheric Dynamics), ESS 142 (Atmospheric Chemistry), ESS 144 (Marine Geochemistry and Biogeochemistry); Physics 111A-B (Classical Mechanics), 112A-B (Electromagnetic Theory); Engineering CBEMS110 (Reaction Kinetics and Reactor Design), CBEMS112 (Introduction to Biochemical Engineering), CBEMS120A (Momentum Transfer), CBEMS120B (Heat and Mass Transfer), CBEMS130 (Separation Processes), CBEMS135 (Chemical Process Control), CBEMS145 (Chemical Engineering Design), CEE162 (Introduction to Environmental Chemistry).

Laboratories: Biological Sciences M114L (Biochemistry Laboratory), M116L (Molecular Biology Laboratory), Chemistry 128L (Introduction to Chemical Biology Laboratory Techniques), 152 (Advanced Analytical Chemistry), 153 (Physical Chemistry Laboratory), 156 (Advanced Laboratory in Chemistry and Synthesis of Materials), 160 (Organic Synthesis Laboratory), 170 (Radioisotope Techniques), 177L (Medicinal Chemistry Laboratory), 180 (Undergraduate Research), Engineering CBEMS140A-B (Chemical Engineering Laboratory), Physics 120 (Electronics for Scientists), and 121 (Advanced Laboratory). (Chemistry 180 can be counted toward this requirement no more than once.)

At least three of the courses used to satisfy the Elective Requirement must be courses offered by the Chemistry Department, including at least one lecture course and one laboratory course.

Optional American Chemical Society Certification: For ACS Certification, the program must include Chemistry 128 or Biological Sciences 98; and two additional laboratory courses from the following list: Chemistry 128L, 152, 153, 156, 160, 180, or H180. These courses may not overlap with the upper-division laboratory elective requirement. A maximum of one quarter of Chemistry 180 or H180 may be used.

Optional Concentration in Biochemistry: The program must include Biological Sciences 97, 98, 99; Chemistry 128, 128L; and three advanced biology electives chosen from Biological Sciences D103, D104, D111L, D137, D147, D151, D153, D154, M114, M114L, M116, M116L, M121, M121L, M122, M122L, M123, M124A, M124B, M124L, M125, M128, M133, M137, M144, M160, N110, Pharmaceutical Sciences 170A, 170B.

Optional Concentration in Chemistry Education: The program requires Chemistry 193; Physical Sciences 5 and 105; Education 55. Students interested in teaching at the high school level are encouraged to complete the course Physical Sciences 106.

Secondary Teaching Certification Option: With *additional* course work and field experience offered through the UCI Cal Teach program, students who complete the concentration in Chemistry Education can also earn a California Preliminary Single Subject Teaching Credential. Completing the bachelor's degree, concentration, and teacher certification in four years is possible with careful, early planning. Additional courses required for teacher certification are Logic and Philosophy of Science 60; Education 109, 143A, 143B, 148, and two quarters of 158. Successful completion of Education 143A-B and 148 will be accepted in lieu of two electives (from the above Elective Requirements list) for students pursuing the concentration in Chemistry Education. For additional information about teacher certification requirements and enrollment procedures, see page 384. Interested students are strongly encouraged to contact the Physical Sciences Student Affairs Office or the Cal Teach Resource and Advising Center.

HONORS PROGRAM IN CHEMISTRY

The Honors Program in Chemistry is a research-based program offered to selected Chemistry majors during their final year. Applicants to the program must have completed their junior year with a grade point average of at least 3.3 overall and in their Chemistry courses. They must also have demonstrated the potential of carrying out research of honors quality, as judged by the Chemistry faculty member who will supervise their research. Students in this program enroll in Honors Research in Chemistry (Chemistry H180A-B-C) throughout their senior year and submit a formal thesis late in the spring quarter. They also enroll in the Honors Seminar in Chemistry (Chemistry H181), in which they receive instruction in scientific writing and present a formal research seminar. Successful completion of Chemistry H181 satisfies the UCI upper-division writing requirement.

Students who complete these requirements, whose grade point average remains above the 3.3 standard, and whose research is judged to be of honors quality will graduate with Departmental Honors in Chemistry.

The Department also offers an Honors General Chemistry sequence, H2A-B-C. This course in general chemistry is designed for members of the Campuswide Honors Program (CHP) and other highly qualified students. It covers the same material as Chemistry 1A-B-C, but in greater depth.

Additional information is available from the Chemistry Undergraduate Program Office.

PLANNING A PROGRAM OF STUDY

The departmental requirements leave the student a great deal of latitude in choice of courses; the student can choose to pursue interests ranging from biochemistry on the one hand to chemical physics on the other. Many of the basic requirements above coincide with those of the School of Biological Sciences. For this reason a double major in Chemistry and Biological Sciences is popular. The Department is approved by the American Chemical Society to offer an undergraduate degree certified by the Society as suitable background for a career in chemistry or for graduate study

in chemistry. While it is not mandatory, it is desirable for students to pursue a course of study that the Department judges to merit a certified degree. Specifically, the following courses must be included in the program of study: Chemistry 128 or Biological Sciences 98; and two laboratory courses from the list of upper-division laboratory courses that are not already required for the major: Chemistry 128L, 152, 153, 156, 160, 170, 177L, 180, or H180. These courses must be taken for a letter grade.

Students should consult with their academic advisors on courses of study. A Chemistry major normally takes Chemistry 1A-B-C and M2LA-LB-LC (or H2A-B-C and H2LA-LB-LC), Mathematics 2A-B-D, and required writing courses during the freshman year. Students are encouraged to enroll in at least one freshman seminar during the freshman year; freshman seminars probe timely scientific topics and allow students to interact with faculty in an intimate environment. The sophomore year should include Chemistry 5, 51A-B-C, and 51LA-LB-LC (or H52A-B-C and H52LA-LB-LC); the Physics 7 sequence should be completed no later than the fall quarter of the junior year. The balance of the freshman and sophomore program can be chosen at the student's discretion with consideration given to progress toward completion of the UCI general education requirement.

In the junior year all Chemistry majors should enroll in a year sequence of physical chemistry and in Chemistry 151/151L (fall), 107 (winter), and 107L (spring). Chemistry 130A-B-C and 131A-B-C are equivalent courses in physical chemistry. They have the same prerequisites and expect the same level of chemical and mathematical rigor. Both are acceptable to satisfy the physical chemistry requirement for the major. Chemistry 131A-B-C develops the topic beginning from a molecular or microscopic point of view and proceeds to the macroscopic description of matter; applications may address primarily gas phase systems. Chemistry 130A-B-C, on the other hand, commences with the macroscopic description; this approach may be of particular interest for applications of physical chemistry in biology, materials science, and engineering. Students should choose between the two courses on the basis of their interests. Because of significant differences in the sequence of topics, students starting in one series may not switch to the other in subsequent quarters.

During the junior and senior years the Chemistry Department electives requirement should be fulfilled, as should other University and departmental requirements.

Sample programs for Chemistry majors, American Chemical Society-certified Chemistry majors, the Biochemistry concentration, the Chemistry Education concentration, and Chemistry-Biological Sciences double majors are shown in the accompanying charts. Sample programs for Chemistry majors wishing to emphasize chemical physics, computational or theoretical chemistry, chemical synthesis and reactivity, or materials or polymer science in their undergraduate programs are also available. All sample programs can be viewed on the Chemistry Department Web site at http://www.chem.uci.edu/undergrad.

The faculty encourages Chemistry majors to enhance their education by studying abroad for one or more quarters, or during the summer. In most cases, the Chemistry EAP advisor can help students plan a program of study that will not extend the time it takes to graduate. Also, study abroad can enhance students' applications for admission to graduate and professional schools. For more information about opportunities to study abroad, see the Center for International Education section of this *Catalogue* or visit the Physical Sciences Student Affairs Office.

Sample Program — Chemistry Majors[1]
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A, M2LA (H2A, H2LA)	Chemistry 1B, M2LB (H2B, H2LB)	Chemistry 1C, M2LC (H2C, H2LC)
Mathematics 2A	Mathematics 2B	Mathematics 2D
Gen. Ed. (Freshman Writing)	Gen. Ed. (Freshman Writing)	Gen. Ed.
Gen. Ed.		
Sophomore		
Chem. 51A, 51LA (H52A, H52LA)	Chem. 51B, 51LB (H52B, H52LB)	Chem. 51C, 51LC (H52C, H52LC)
Chemistry 5	Physics 7C, 7LC	Physics 7D, 7LD
Physics 2 (or 7A, 7LA)	(or 7B, 7LB)	Gen. Ed.
	Gen. Ed.	
Junior		
Chem. 131A (130A)	Chem. 131B (130B)	Chem. 131C (130C)
Physics 7E	Chemistry 107	Chemistry 107L
Chemistry 151, 151L	Chemistry Elective	Chemistry Elective
	Gen. Ed./Elective	Gen. Ed./Elective
Senior		
Chemistry Elective	Chemistry Elective	Chemistry Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective

[1] For ACS Certification, the program must include Chemistry 128 or Biological Sciences 98; and two additional laboratory courses from the following list: Chemistry 128L, 152, 153, 156, 160, 180, or H180. These courses may not overlap with the upper-division laboratory elective requirement. A maximum of one quarter of Chemistry 180 or H180 may be used.

Sample Program — Concentration in Biochemistry
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A, M2LA (H2A, H2LA)	Chemistry 1B, M2LB (H2B, H2LB)	Chemistry 1C, M2LC (H2C, H2LC)
Mathematics 2A	Mathematics 2B	Mathematics 2D
Gen. Ed. (Freshman Writing)	Gen. Ed. (Freshman Writing)	Gen. Ed.
Gen. Ed.		
Sophomore		
Chem. 51A, 51LA (H52A, H52LA)	Chem. 51B, 51LB (H52B, H52LB)	Chem. 51C, 51LC (H52C, H52LC)
Chemistry 5	Physics 7C, 7LC	Physics 7D, 7LD
Physics 2 (or 7A, 7LA)	(or 7B, 7LB)	Biological Sciences 99
Biological Sciences 97	Biological Sciences 98	
Junior		
Chem. 130A (131A)	Chemistry 130B (131B)	Chemistry 130C (131C)
Physics 7E	Chemistry 107	Chemistry 107L
Chemistry 151, 151L	Chemistry 128	Chemistry 128L
	Gen. Ed./Elective	Gen. Ed./Elective
Senior		
Advanced Bio. Elective	Advanced Bio. Elective	Chemistry Elective
Gen. Ed./Elective	Gen. Ed./Elective	Advanced Bio. Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
		Gen. Ed./Elective

Sample Program — Concentration in Chemistry Education (with Secondary Teaching Certification option)
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A, M2LA	Chemistry 1B, M2LB	Chemistry 1C, M2LC
Mathematics 2A	Mathematics 2B	Mathematics 2D
Physical Sciences 5	Gen. Ed.	Gen. Ed.
Sophomore		
Chemistry 51A, 51LA	Chemistry 51B, 51LB	Chemistry 51C, 51LC
Chemistry 5	Physics 7C, 7LC	Physics 7D, 7LD
Physical Sciences 105	(or 7B, 7LB)	Log. & Philo. Sci. 60
(Physics 2 or 7A, 7LA)	(Physical Sciences 106)	Gen. Ed.
	Chemistry 193	
Junior		
Chemistry 131A (130A)	Chemistry 131B (130B)	Chemistry 131C (130C)
Physics 7E	Chemistry 107	Chemistry 107L
Education 55	Chemistry Elective	Gen. Ed.
Gen. Ed.	Education 143A	Education 143B
Senior		
Chemistry 151, 151L	Chemistry Elective	Gen. Ed.
Education 148	Education 109	Chemistry Elective
Gen. Ed.	Education 158	Education 158

Sample Program — Chemistry-Biological Sciences Double Majors
Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A, M2LA (H2A, H2LA)	Chemistry 1B, M2LB (H2B, H2LB)	Chemistry 1C, M2LC (H2C, H2LC)
Mathematics 2A	Mathematics 2B	Mathematics 2D
Bio. Sci. 93	Bio. Sci. 94	Bio. Sci. 2B
Gen. Ed. (Freshman Writing)	Gen. Ed. (Freshman Writing)	Gen. Ed.
Bio. Sci. 2A		
Sophomore		
Chem. 51A, 51LA (H52A, H52LA)	Chem. 51B, 51LB (H52B, H52LB)	Chem. 51C, 51LC (H52C, H52LC)
Bio. Sci. 194S	Physics 7C, 7LC	Physics 7D, 7LD
Physics 2 (or 7A, 7LA)	(or 7B, 7LB)	Bio. Sci. 99
Bio. Sci. 97	Bio. Sci. 98	Chemistry 5
	Gen. Ed./Elective	
Junior		
Chem. 130A (131A)	Chem. 130B (131B)	Chem. 130C (131C)
Physics 7E	Chemistry 107	Chemistry 107L
Chemistry 151, 151L	Required Bio. Sci. major course	Required Bio. Sci. major course
Bio. Sci. 100L	Gen. Ed./Elective	Gen. Ed./Elective
Senior		
Required Bio. Sci. major course	Chemistry Elective	Chemistry Elective
Bio. Sci. Lab	Bio. Sci. Elective	Chemistry Elective
Gen. Ed./Elective	Bio. Sci. Lab	Bio. Sci. Lab
	Gen. Ed./Elective	Gen. Ed./Elective

Graduate Program

The Department offers the M.S. and Ph.D. degrees in Chemistry. The Ph.D. degree is granted in recognition of breadth and depth of knowledge of the facts and theories of modern chemistry and an ability to carry out independent chemical research demonstrated through submission of an acceptable doctoral dissertation. The M.S. degree may be earned either through submission of an acceptable Master's thesis (Plan I) or through an approved program of graduate course work and a comprehensive oral examination (Plan II). A Master's degree is not a prerequisite for admission to the Ph.D. program.

Students in the Ph.D. and M.S. Plan I (Thesis) programs are required to complete a minimum of seven approved courses (or 28 units), including six graduate-level courses (or 24 units), in chemistry. The M.S. Plan II (Non-Thesis) program requires that the student complete 10 graduate-level chemistry courses (or 40 units) and a comprehensive oral examination. Graduate students are expected to attain grades of B or better to remain in good academic standing. The comprehensive oral examination assesses the competence of the candidate in the areas of chemistry covered by the chosen course work, with unanimous agreement among the three examination committee members required for satisfactory completion.

Progress toward the Ph.D. degree during the first year is assessed by a written examination administered after completion of the first year of study. This examination covers either research accomplishments during the first year or comprehensive knowledge acquired in course work. The time and content of the examination depends upon the student's specific area of interest.

Training in teaching is an integral part of each graduate program, and all graduate degree candidates are expected to participate in the teaching program for at least four quarters during their graduate career.

Participants in the Ph.D. program take an oral examination for formal Advancement to Candidacy. This examination consists of an oral defense before a faculty committee of the student's dissertation research project, and an original research proposition conceived, developed, and documented by the student. The committee may examine the student at this time on any subject it deems relevant to the independent pursuit of chemical research. The normative time for advancement to candidacy is three years.

The most important component of the Ph.D. program is the doctoral dissertation, which must describe the results of original research performed by the student under the supervision of a faculty member of the Department. The criterion for acceptability of the dissertation is that its contents be of a quality suitable for publication in a scientific journal of high editorial standards. Each Ph.D. candidate is expected to present the work described in the completed dissertation in a seminar before the Department, following which the candidate will be examined on the contents of the dissertation by a committee of the faculty. A Master's thesis presented in partial fulfillment of the requirements for the M.S. under Plan I must also describe the results of a student's original research performed under the direction of a faculty member. However, no public oral defense of the Master's thesis is required.

Residency requirements specify a minimum of six quarters in residence at UCI for Ph.D. candidates and three quarters for M.S. candidates.

The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

MASTER OF SCIENCE IN CHEMISTRY WITH A TEACHING CREDENTIAL

In cooperation with the UCI Department of Education, the Chemistry Department sponsors a coordinated two-year program for the M.S. degree in Chemistry and the California Single Subject Teaching Credential. The M.S. degree may be obtained under either Plan I or Plan II described below. Prospective graduate students interested in this program should so indicate on their graduate application and should request a detailed description of the program from the Chemistry Department Graduate Affairs Office or the Department of Education.

The following lists specify requirements for each of the graduate programs offered by the Department of Chemistry.

MASTER OF SCIENCE IN CHEMISTRY PLAN I (Thesis Plan)

Completion of a minimum of seven approved courses (or 28 units), including six graduate-level courses (or 24 units) in chemistry (as specified by the Department and excluding Chemistry 280, 290, 291, and 399) with maintenance of an average grade of B or better in all course work undertaken.

Completion of the teaching requirement.

Completion of three quarters in residence at UCI.

Submission of an acceptable Master's thesis.

MASTER OF SCIENCE IN CHEMISTRY PLAN II (Non-Thesis Plan)

Completion of 10 graduate-level courses (or 40 units) in chemistry (excluding Chemistry 290, 291, and 399 and counting Chemistry 280 no more than once) with an average grade of B or better.

Maintenance of an average grade of B or better in all course work undertaken.

Completion of the teaching requirement.

Completion of three quarters in residence at UCI.

Satisfactory completion of a comprehensive oral examination.

DOCTOR OF PHILOSOPHY IN CHEMISTRY

Completion of a minimum of seven approved courses (or 28 units), including six graduate-level courses (or 24 units) in chemistry (as specified by the Department and excluding Chemistry 280, 290, 291, and 399) with maintenance of an average grade of B or better in all course work undertaken.

Completion of the second-year Examination requirement.

Completion of the Oral Examination requirement for Advancement to Candidacy.

Completion of the teaching requirement.

Completion of six quarters in residence at UCI.

Submission of an acceptable doctoral dissertation.

Area Requirements

Ph.D. students generally choose from one of six areas of specialization in the Department which determines course work requirements. Generally, each area requires three or four core courses and a menu of additional courses from which to choose to reach the required total of seven courses.

Analytical Chemistry: Three core courses: Chemistry 243, 246, and 249; plus four additional courses from Chemistry 213, 230, 231A, 232A, 233, 234, 247, 248, 271, and 272.

Atmospheric Chemistry: Three core courses: Chemistry 213, either Chemistry 231A or 232A, and Chemistry 245; plus four additional courses from Chemistry 230, 231A, 231B, 232A, 234, 241, and 243, 246, 249, and Earth System Science 208A and 208B.

Chemical and Structural Biology–Bioinorganic: Five required courses: Chemistry 215, 217, 218, 219, and Molecular Biology and Biochemistry 204. Two additional courses from: Chemistry 201, 202, 203, 204, 205, 216, 220, 222, 227, 231A, 231B, 231C, 232A, 232B, 232C, 243, 249, 253, 271, and Molecular Biology and Biochemistry 208, 211, 223, and 254.

Chemical and Structural Biology–Bioorganic: Five required courses: Chemistry 201, 204, 219, and Molecular Biology and Biochemistry 203 and 204. Two additional courses from: Chemistry 202, 203, 205, 215, 216, 218, 220, 222, 227, 231A, 231B, 231C, 232A, 232B, 232C, 243, 249, 253, 271, and Molecular Biology and Biochemistry 208, 211, 223, and 254.

Chemical and Structural Biology–Biophysical: Five required courses: Chemistry 219, 221A, 231A, 232A, and Molecular Biology and Biochemistry 204. Two additional courses from: Chemistry 201, 202, 203, 204, 205, 215, 216, 218, 220, 222, 227, 231B, 231C, 232B, 232C, 243, 249, 253, 271, and Molecular Biology and Biochemistry 208, 211, 223, and 254.

Chemical and Structural Biology–Structural: Five required courses: Chemistry 219 and Molecular Biology and Biochemistry 203, 204, 211, and one of the following: Chemistry 218, 220, 221A. Two additional courses from: Chemistry 201, 202, 203, 204, 205, 215, 216, 218, 220, 222, 227, 231A, 231B, 231C, 232A, 232B, 232C, 243, 249, 253, 271, and Molecular Biology and Biochemistry 208, 223, and 254.

Inorganic Chemistry: Three core courses: Chemistry 215, 216, and 217; plus four additional courses from Chemistry 201, 202, 203, 204, 205, 220, 225, and 249, Molecular Biology and Biochemistry 203, 204, and 207, Biological Chemistry 210A and 212.

Organic Chemistry: Three core courses: Chemistry 201, 203, and 204 or 220; plus four additional courses from Chemistry 202, 205, 215, 216, 217, 218, 220, and 225, Molecular Biology and Biochemistry 203, 204, and 207, Biological Chemistry 210A and 212, Physiology and Biophysics 204 and 242.

Physical Chemistry: Three core courses: Chemistry 213, 231A, and 232A; plus four additional courses from Chemistry 207, 227, 230, 231B, 231C, 232B, 232C, 234, 235, 236, 248, 249, and 266.

Theoretical Chemistry: Six core courses: Chemistry 231A, 231B, 232A, 232B, 229A, 237. Three additional courses from Chemistry 213, 228, 229B, 230, 231C, 232C, 235, 254, or Physics 213C, 223, 238A.

CONCENTRATION IN CHEMICAL AND MATERIALS PHYSICS

This is an interdisciplinary program between condensed matter physics and physical chemistry, which is designed to eliminate the barrier between these two disciplines. Students with B.S. degrees in Physics, Chemistry, or Materials Science and Engineering, are encouraged to apply to the program. The goal of the concentration in Chemical and Materials Physics (ChaMP) is to provide students with a broad interdisciplinary education in the applied physical sciences that emphasizes modern laboratory and computational skills. The program accepts students for both the M.S. and the Ph.D. degrees. Upon admission to the program, students are assigned two faculty advisors, one from the Department of Physics and Astronomy, and one from the Department of Chemistry, to provide guidance on curriculum and career planning.

The curriculum for the M.S. program includes a summer session to assimilate students with different undergraduate backgrounds; formal shop, laboratory, and computational courses; a sequence on current topics to bridge the gap between fundamental principles and applied technology; and a course to develop communication skills. The required courses include thirteen core courses and three electives (subject to advisor approval) as follows: **Core:** Chemistry 206, 208, 229A, 231C, 232A-B, 266; Physics 273 or Chemistry 273; Chemistry 231A or Physics 215A; Chemistry 231B or Physics 215B; two courses from the following group: Chemistry 228, 230, Physics 211, 222; one course from Physics 133 or 238A or Chemistry 236. **Electives:** Chemistry 213, 225, 226, 229B, 232C, 233, 243, 248, 249, Engineering EECS285B, MSE259A, Physics 134, 213C, 223, 229B, 233A-B, 238A-B-C. In addition to the required courses, M.S. students complete a master's thesis. Students are required to advance to candidacy for the master's degree at least one quarter prior to filing the master's thesis. There is no examination associated with this advancement, but the thesis committee needs to be selected and appropriate forms need to be

filed. The M.S. program prepares students to compete for high-tech jobs or to begin research toward a Ph.D. degree.

Successful completion of the M.S. degree requirements qualifies students for the Ph.D. program. Progress toward the Ph.D. degree is assessed by a written comprehensive examination administered in the summer after completion of the first year of study. This examination covers comprehensive knowledge acquired in course work, and the content of the examination depends upon the student's specific area of interest.

Participants in the Ph.D. program take an examination for formal advancement to candidacy. It is typically taken within one year of successful completion of the comprehensive examination. To satisfy normative progress toward the degree, it must be taken by the end of the student's third year. The examination is comprised of two parts: (a) a written report on a topic to be determined in consultation with the research advisor and (b) an oral report on research accomplished and plans for completion of the Ph.D. dissertation.

GRADUATE GATEWAY PROGRAM IN MEDICINAL CHEMISTRY AND PHARMACOLOGY (MCP)

The one-year graduate Gateway Program in Medicinal Chemistry and Pharmacology (MCP) is designed to function in concert with selected department programs, including the Ph.D. in Chemistry. Detailed information is available in the Department of Pharmaceutical Sciences section on page 529, and online at http://www.cohs.uci.edu/pharm.shtml.

Courses in Chemistry

(Schedule of Classes **designation: Chem)**

LOWER-DIVISION

NOTE: Enrollment in lower-division Chemistry courses is subject to limitations. See the guidelines for Chemistry course placement at http://www.testingcenter.uci.edu/chemistry.html and in the *Schedule of Classes* (available at http://www.reg.uci.edu).

The Department of Chemistry strictly enforces all course prerequisites. Courses with sequential designations (i.e., 1A-B-C) indicate multiple-quarter courses; each course in a sequence is prerequisite to the next in the series.

1A-B-C General Chemistry (4-4-4) F, W, S, Summer. Lecture, three hours; discussion, one hour. Atomic and molecular structure; properties of gases, liquids, solids, and solutions; stoichiometry; chemical equilibrium; chemical thermodynamics; chemical kinetics; periodic properties and descriptive chemistry of the elements. Corequisite: concurrent enrollment in the corresponding laboratory courses. Prerequisite for Chemistry 1A: one year of high school chemistry is strongly recommended; for Chemistry 1B and 1C, a grade of C- or better in all previous courses in the sequence. Chemistry 1A-B-C and Chemistry H2A-B-C may not both be taken for credit. **(II)**
NOTE: Students who have had one year of high school chemistry normally start with Chemistry 1A. Students who did not take high school chemistry or who need help with algebraic problem solving should enroll in Chemistry 1P. Refer to the guidelines for Chemistry course placement on the Testing Center's Web site. Students who take Chemistry 1P must earn a grade of C- or better to move on to Chemistry 1A.

1LB-LC General Chemistry Laboratory (2-2) F, W, S, Summer. Discussion, one hour; laboratory, four hours. Training and experience in basic laboratory techniques. Chemical practice and principles illustrated through experiments related to lecture topics in Chemistry 1A-B-C. Corequisite for Chemistry 1LB and 1LC: concurrent enrollment in the corresponding segment of Chemistry 1. Prerequisite for Chemistry 1LB: a grade of C- or better in Chemistry 1A. Prerequisite for Chemistry 1LC: a grade of C- or better in Chemistry 1B and 1LB or Chemistry 1A and 1LE. Chemistry 1LB-LC and H2LB-LC may not both be taken for credit. Only one course from Chemistry 1LB, 1LE, H2LB, or M2LB may be taken for credit. **(IX)**

1LE Accelerated General Chemistry Laboratory (3) F, W, Summer. Discussion, two hours; laboratory, four hours. Lecture and experiments covering chemical concepts for accelerated students who do not plan to take organic chemistry. Properties of gases, liquids, solutions, and solids; chemical equilibrium, chemical thermodynamics; atomic and molecular structure; chemical kinetics; electrochemistry. Corequisite: Chemistry 1A or 1B. Prerequisite: one year of high school chemistry is strongly recommended. Only one course from Chemistry 1LE, 1LB, H2LB, or M2LB may be taken for credit. **(IX)**

1P Preparation for General Chemistry (4) F, W, Summer. Lecture, three hours; discussion, one hour. Units of measurement, dimensional analysis, significant figures; elementary concepts of volume, mass, force, pressure, energy, density, temperature, heat, work; fundamentals of atomic and molecular structure; the mole concept; stoichiometry; properties of the states of matter; gas laws; solutions, concentrations. NOTE: Chemistry 1P satisfies no requirements other than contribution to the 180 units required for graduation. Designed for students without a high school chemistry background or who need additional help prior to enrollment in Chemistry 1A. Refer to the guidelines for Chemistry course placement on the Testing Center's Web site. Students who take Chemistry 1P must earn a grade of C- or better to move on to Chemistry 1A.

H2A-B-C Honors General Chemistry (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Covers the same material as Chemistry 1A-B-C but in greater depth. Additional topics included as time permits. Corequisite: concurrent enrollment in the corresponding quarter of Chemistry H2LA-LB-LC. Prerequisite for Chemistry H2A: membership in the Campuswide Honors Program, or a score of 4 or 5 on the Chemistry Advanced Placement Examination, or a score of 700 or better on the SAT II in Chemistry, or consent of instructor. Prerequisite for Chemistry H2B-C: a grade of B or better in preceding course in series. Chemistry H2A-B-C satisfies the same requirements and prerequisites as Chemistry 1A-B-C; corresponding segments may not both be taken for credit. **(II)**

H2LA-LB-LC Honors General Chemistry Laboratory (2-2-2) F, W, S. Discussion, one hour. laboratory, four hours. Training and experience in basic laboratory techniques through experiments related to lecture topics in Chemistry H2A-B-C. Corequisite: concurrent enrollment in the corresponding segment of Chemistry H2A-B-C. Prerequisite: membership in the Campuswide Honors Program, or a score of 4 or 5 on the Chemistry Advanced Placement Examination, or a score of 700 or better on the SAT II in Chemistry, or consent of instructor. Chemistry H2LA-LB-LC and Chemistry 1LB-LC may not both be taken for credit. Only one course from Chemistry 1LE, 1LB, H2LB, or M2LB may be taken for credit. **(IX)**

M2LA-LB-LC Majors General Chemistry Laboratory (2-2-2) F, W, S. Discussion, one hour; laboratory, four hours. Training and experience in basic laboratory techniques through experiments related to lecture topics in Chemistry 1A-B-C. Corequisite: concurrent enrollment in the corresponding segment of Chemistry 1A-B-C. Prerequisite: one year of high school chemistry is strongly recommended. Open to Chemistry majors only. Chemistry M2LA-LB-LC and Chemistry 1LB-LC may not both be taken for credit. Only one course from Chemistry 1LE, 1LB, H2LB, or M2LB may be taken for credit. **(IX)**

5 Scientific Computing Skills (4) F, S, Summer. Lecture, three hours; discussion, one hour; laboratory, two hours. Introduces students to the personal computing software used by chemists for managing and processing of data sets, plotting of graphs, symbolic and numerical manipulation of mathematical equations, and representing chemical reactions and chemical formulas. Corequisites: Chemistry 1C or H2C, and Mathematics 2D. Prerequisites: Chemistry 1A-B or H2A-B, and Mathematics 2A-B.

51A-B-C Organic Chemistry (4-4-4); 51A (F, W, Summer), 51B (W, S, Summer), 51C (S, Summer, F). Lecture, three hours; discussion, one hour. Fundamental concepts relating to carbon compounds with emphasis on structural theory and the nature of chemical bonding, stereochemistry, reaction mechanisms, and spectroscopic, physical, and chemical properties of the principal classes of carbon compounds. Corequisite for 51A-B: concurrent enrollment in the corresponding segment of Chemistry 51L. Prerequisites for 51A: Chemistry 1A-B-C and 1LB-1LC. Prerequisites for 51B and 51C: a grade of C- or better in previous quarter of sequence. Chemistry 51A-B-C and Chemistry H52A-B-C may not both be taken for credit.
NOTE: Priority for enrollment in the Chemistry 51A-B-C sequence offered in W-S-Summer/F is given to students who successfully complete Chemistry 1C in the preceding fall quarter.

51LA-LB-LC Organic Chemistry Laboratory (2-2-2); 51LA (F, W, Summer), 51LB (W, S, Summer), 51LC (S, Summer, F). Discussion, one hour; laboratory, four hours. Modern techniques of organic chemistry, using selected experiments to illustrate topics introduced in Chemistry 51A-B-C. Corequisite for 51LA-LB-LC: concurrent enrollment in the corresponding segment of Chemistry 51. Prerequisites for 51LB: a grade of C- or better in Chemistry 51A and 51LA. Prerequisites for 51LC: a grade of C- or better in Chemistry 51B and 51LB. Chemistry 51LA-LB-LC and Chemistry H52LA-LB-LC may not both be taken for credit.
NOTE: Chemistry H52A-B-C, H52LA-LB-LC satisfy the same requirements and prerequisites as Chemistry 51A-B-C, 51LA-LB-LC; corresponding segments may not both be taken for credit.

H52A-B-C Honors Organic Chemistry (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Fundamental concepts of the chemistry of carbon compounds. Structural, physical, and chemical properties of the principal classes of carbon compounds. Corequisite: concurrent enrollment in the corresponding segment of Chemistry H52L. Prerequisites for H52A: a B average in Chemistry 1A-B-C or H2A-B-C or consent of instructor. Prerequisites for H52B and H52C: a grade of C or better in previous quarter of sequence. Chemistry H52A-B-C and Chemistry 51A-B-C may not both be taken for credit.

H52LA-LB-LC Honors Organic Chemistry Laboratory (2-2-2) F, W, S. Laboratory, five hours. Fundamental techniques of modern experimental organic chemistry. Corequisite: concurrent enrollment in the corresponding segment of Chemistry H52. Prerequisite for H52LB and H52LC: a grade of C or better in previous quarter of sequence. Chemistry H52LA-LB-LC and Chemistry 51LA-LB-LC may not both be taken for credit.

H90 The Idiom and Practice of Science (4). Lecture, three hours; discussion, two hours. A series of fundamental and applied scientific problems are addressed, illustrating the pervasive role of mathematical analysis. Topics may include thermodynamics, chemical equilibria, acid-base chemistry, kinetics, states of matter, electronic structure of atoms and the periodic table, chemical bonding, spectroscopy, and topics from organic, atmospheric, and biochemistry. Open only to members of the Campuswide Honors Program or with consent of instructor. **(II)**

UPPER-DIVISION

107 Inorganic Chemistry I (4) W. Lecture, three hours; discussion, one hour. Introduction to modern inorganic chemistry. Principles of structure, bonding, and chemical reactivity with application to compounds of the main group and transition elements, including organometallic chemistry. Prerequisites: Chemistry 1A-B-C; 51A-B-C or H52A-B-C.

107L Inorganic Chemistry Laboratory (3) S. Laboratory, seven hours; discussion, one hour. Modern techniques of inorganic and organometallic chemistry including experience with glove box, Schlenk line, and vacuum line methods. Prerequisite: Chemistry 107.

125 Advanced Organic Chemistry (4) F. Lecture, three hours; discussion, one hour. Rapid-paced comprehensive treatment of organic chemistry, reinforcing the fundamental concepts introduced in Chemistry 51A-B-C and H52A-B-C. Focuses on molecular structure, reactivity, stability, scope and mechanisms of organic reactions. Topics include: structure and bonding; theoretical organic chemistry; acidity and basicity; reactive intermediates; pericyclic reactions; stereochemistry; organic synthesis; natural products; organic photochemistry. Prerequisites: Chemistry 51A-B-C or H52A-B-C.

127 Inorganic Chemistry II (4) S. Lecture, three hours; discussion, one hour. Advanced treatment of selected fundamental topics in inorganic chemistry, building on material presented in Chemistry 107. Molecular symmetry with applications to electronic structure and spectroscopy. Reaction kinetics and mechanisms; inorganic synthesis and catalysis; bioinorganic chemistry. Prerequisite: Chemistry 107.

128 Introduction to Chemical Biology (4) W. Lecture, three hours; discussion, one hour. Introduction to the basic principles of chemical biology: structures and reactivity; chemical mechanisms of enzyme catalysis; chemistry of signaling, biosynthesis, and metabolic pathways. Prerequisites: Chemistry 1A-B-C; Chemistry 51A-B-C or H52A-B-C.

128L Introduction to Chemical Biology Laboratory Techniques (4) S. Discussion, one hour; laboratory, six hours. Introduction to the basic laboratory techniques of chemical biology: electrophoresis, plasmid preparation, PCR, protein expression, isolation, and kinetics. Prerequisite: Chemistry 128.

NOTE: Chemistry 130A-B-C and 131A-B-C are parallel courses in physical chemistry; both are acceptable to satisfy the physical chemistry requirements for the major. Because of significant differences in course content, students starting in one series may not switch to the other in subsequent quarters.

130A-B-C Physical Chemistry: Biological and Materials Applications. Lecture, three hours; discussion, one hour.

130A Chemical Thermodynamics (4) F. Principles of chemical and heterogeneous equilibrium. Multiple chemical equilibrium, electrochemical equilibria, and equilibria at phase boundaries. Corequisite: Physics 7E or Engineering CBEMS40A or CBEMS45A; and Chemistry 5. Prerequisites: Chemistry 1C, Mathematics 2D, and Physics 7D.

130B Quantum Chemistry, Spectroscopy, and Bonding (4) W. Fundamentals of molecular quantum mechanics. Development of the principles of rotational, vibrational, electronic, and magnetic resonance spectroscopy. Chemical bonding. Applications to biological and condensed phase systems. Prerequisite: Chemistry 130A or Engineering CBEMS45C; Physics 7D or 7E.

130C Structure, Statistical Mechanics, and Chemical Dynamics (4) S. Kinetic theory and statistical mechanics with applications to gases, macromolecules, and condensed phases. Transport phenomena. Chemical kinetics. Prerequisite: Chemistry 130B.

131A-B-C Physical Chemistry: A Molecular Approach. Lecture, three hours; discussion, one hour.

131A Quantum Principles (4) F. Principles of quantum chemistry with applications to nuclear motions and the electronic structure of the hydrogen atom. Corequisite: Physics 7E, or Engineering CBEMS40A or CBEMS45C; and Chemistry 5. Prerequisites: Chemistry 1C, Mathematics 2D, and Physics 7D.

131B Molecular Structure and Elementary Statistical Mechanics (4) W. Principles of quantum mechanics with application to the elements of atomic structure and energy levels, diatomic molecular spectroscopy and structure determination, and chemical bonding in simple molecules. Prerequisites: Chemistry 131A; Physics 7E or Engineering CBEMS45C.

131C Thermodynamics and Chemical Dynamics (4) S. Energy, entropy, and the thermodynamic potentials. Chemical equilibrium. Chemical kinetics. Prerequisite: Chemistry 131B.

135 Methods of Molecular Structure Determination (4) F, W. Lecture, three hours; discussion, one hour. Determination of molecular structure using spectroscopic, diffraction, and scattering techniques. Prerequisites: Chemistry 130A-B-C or 131A-B-C.

137 Computational Chemistry (4) S. Lecture, three hours; discussion, one hour; laboratory, three hours. Short introduction to programming languages and to representative algorithms employed in chemical research. Students have the opportunity to devise and employ their own codes and also to employ codes which are widely used in various fields of chemistry. Corequisite: Chemistry 130B or 131B. Prerequisites: Chemistry 51A-B-C or H52A-B-C and 130A or 131A.

138 Introduction to Computational Organic Chemistry (4). Lecture, three hours; discussion, one hour; laboratory, three hours. An introduction to the use of computational chemistry to investigate reaction mechanisms, to calculate structures, and to predict properties of molecules. Students have the opportunity to perform calculations employing computational methods which are widely used in various fields of chemistry. Prerequisites: Chemistry 51A-B-C or H52A-B-C.

151 Quantitative Analytical Chemistry (4) F, Summer. Lecture, three hours; discussion, one hour. Theoretical aspects of methods in analytical chemistry. Topics include statistical treatment of data and the fundamental chemistry which underlies methods of chemical analysis. Corequisite: Chemistry 151L. Prerequisites: Chemistry 1A-B-C, 1LB-LC; 5; 51A-B-C and 51LA-LB-LC or H52A-B-C and H52LA-LB-LC.

151L Quantitative Analytical Chemistry Laboratory (2) F, Summer. Discussion, one hour; laboratory, six hours. Practical aspects of important methods in analytical chemistry. Laboratory analysis of standard samples. Laboratory experiments include methods of gravimetry, titrimetry, chromatography and other separation methods, spectrochemical and electrochemical measurements. The use of computer programs for the reduction of data from laboratory experiments is encouraged. Corequisite: Chemistry 151. Prerequisites: Chemistry 1A-B-C, 1LB-LC; 5; 51A-B-C and 51LA-LB-LC or H52A-B-C and H52LA-LB-LC.

152 Advanced Analytical Chemistry (5) W. Lecture, three hours; discussion, one hour; laboratory, seven hours. In-depth treatment of most modern instrumental methods for quantitative analysis of real samples and basic principles of instrument design. Laboratory experiments in the use of electronic test equipment, microprocessor programming; interfacing and use of techniques such as absorption, emission, and luminescence spectrophotometry, polarography, gas and liquid chromatography, magnetic resonance, neutron activation analysis, and mass spectrometry. Prerequisite: Chemistry 151 and 151L.

153 Physical Chemistry Laboratory (4) S. Prelaboratory lecture, three hours; laboratory, nine hours. Laboratory exercises emphasize quantitative characterization of chemical substances and chemical processes. Experiments in chemical thermodynamics, atomic and molecular spectroscopy, chemical kinetics, and various methods of molecular structure determination. Corequisite: Chemistry 130C or 131C. Prerequisites: Chemistry 151, 151L, and Chemistry 130A-B or 131A-B.

156 Advanced Laboratory in Chemistry and Synthesis of Materials (4) S. Lecture, two hours; laboratory, eight hours. Synthesis and characterization of organic and inorganic materials including polymers and oxides. Techniques include electron and scanning probe microscopy, gel permeation chromatography, x-ray diffraction, porosimetry, and thermal analysis. Prerequisite: Chemistry 130A-B or 131A-B or Engineering ENGR54 or Pharmaceutical Sciences 171. Same as Engineering CBEMS160.

160 Organic Synthesis Laboratory (4) W, S. Lecture, two hours; discussion, one hour; laboratory, eight hours. Modern experimental techniques in organic synthesis including experience with thin-layer chromatography, liquid chromatography, and gas chromatography. Modern methods of structure elucidation including FT NMR are employed in the characterization of products. Prerequisite: Chemistry 125.

170 Radioisotope Techniques (4) F, W. Lecture, three hours; laboratory, four to six hours. Basic theory and practice of production, separation, safe handling, counting, applications of radioactive isotopes with emphasis on applications in chemistry, biology, and medicine. Prerequisite: Chemistry 151, 151L.

177 Medicinal Chemistry (4) F, W. Lecture, three hours; discussion, one hour. An introduction of the basics of drug activity and mechanisms. Strategies used to identify lead compounds such as natural product chemistry, combinatorial chemistry, molecular modeling, and high-throughput screening. Relationship of molecular structure to pharmacological activity. Corequisite: Chemistry 177L. Prerequisites: Chemistry 51A-B-C or equivalent, and Biological Science 98 or Chemistry 128. Same as Pharmaceutical Sciences 177.

177L Medicinal Chemistry Laboratory (2) F, W. Laboratory, four hours. Laboratory accompanying Chemistry 177. Corequisite: Chemistry 177. Prerequisites: Chemistry 51A-B-C or equivalent, and Biological Science 98 or Chemistry 128. Same as Pharmaceutical Sciences 177L.

180 Undergraduate Research (4-4-4) F, W, S. The student wishing to engage in research for credit should arrange with a member of the faculty to sponsor and supervise such work. A student time commitment of 10 to 15 hours per week is expected, and a written research report is required at the end of each quarter of enrollment. Prerequisite: consent of a faculty sponsor.

H180A-B-C Honors Research in Chemistry (4-4-4) F, W, S. Undergraduate honors research in Chemistry. A student time commitment of 10–15 hours per week is required. Corequisite for H180C: Chemistry H181. Prerequisites: consent of instructor; open to participants in the Chemistry Honors program and to Chemistry majors participating in the Campuswide Honors Program.

H181 Honors Seminar in Chemistry (2) S. Students receive guidance in the preparation of oral and written research presentations. A written thesis is prepared and a formal research seminar is presented. Corequisite: Chemistry H180C. Prerequisites: successful completion of Chemistry H180A-B; satisfactory completion of the lower-division writing requirement. Open only to students in the Chemistry Honors Program and Chemistry majors who are participating in the Campuswide Honors Program.

191 Chemistry Outreach Program (2) F, W, S. Field work, six to eight hours; discussion, one hour. Involves intensive participation in the UCI Chemistry Outreach Program, which performs Chemistry demonstrations at local high schools. Pass/Not Pass only. May be taken for credit six times.

192 Tutoring in Chemistry (2) F, W, S. Enrollment limited to participants in the Chemistry Peer Tutoring Program. Prerequisite: consent of instructor. May be taken for a total of 18 units of which the first eight may be taken for a letter grade. The remaining 10 units must be taken Pass/Not Pass only. NOTE: No more than eight units may be counted toward the 180 units required for graduation. Satisfies no degree requirement other than contribution to the 180-unit total.

193 Research Methods (4) W, S. Lecture, three hours; laboratory, two hours. Explores tools of inquiry for developing and implementing science research projects. Students undertake independent projects requiring data collection, analysis, and modeling, and the organization and presentation of results. Additional topics include ethical issues and role of scientific literature. Prerequisite: Biological Sciences 14 or Physical Sciences 5. Same as Physics 193 and Biological Sciences 108.

199 Independent Study in Chemistry (1 to 4 per quarter). The student wishing to engage in independent study for credit should arrange with a member of the faculty to sponsor and supervise such work. A student time commitment of three to four hours per week per unit is expected, and a written report on the independent study is required at the end of each quarter of enrollment. Prerequisite: consent of instructor.

GRADUATE

201 Organic Reaction Mechanisms I (4). Lecture, three hours; discussion, one hour. Advanced treatment of basic mechanistic principles of modern organic chemistry. Topics include molecular orbital theory, orbital symmetry control of organic reactions, aromaticity, carbonium ion chemistry, free radical chemistry, the chemistry of carbenes and carbanions, photochemistry, electrophilic substitutions, aromatic chemistry. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

202 Organic Reaction Mechanisms II (4). Lecture, three hours; discussion, one hour. Topics include more in-depth treatment of mechanistic concepts, kinetics, conformational analysis, computational methods, stereoelectronics, and both solution and enzymatic catalysis. Prerequisite: Chemistry 201.

203 Organic Spectroscopy (4). Lecture, three hours; discussion, one hour. Modern methods used in structure determination of organic molecules. Topics include mass spectrometry; ultraviolet, chiroptical, infrared, and nuclear magnetic resonance spectroscopy. Prerequisite: Chemistry 51A-B-C or H52A-B-C.

204 Organic Synthesis I (4). Lecture, three hours; discussion, one hour. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis is on carbon-carbon bond forming methodology. Topics include carbonyl annelations, cycloadditions, sigmatropic rearrangements, and organometallic methods. Corequisite: concurrent enrollment in Chemistry 202.

205 Organic Synthesis II (4). Lecture, three hours; discussion, one hour. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis this quarter is on natural product total synthesis and retrosynthetic (antithetic) analysis. Prerequisite: Chemistry 204.

206 Laboratory Skills (4 to 6). Lecture, three hours; laboratory, six to ten hours. Introduces students to a variety of practical laboratory techniques, including lock-in, boxcar, coincidence counting, noise filtering, PID control, properties of common transducers, computer interfacing to instruments, vacuum technology, laboratory safety, basic mechanical design, and shop skills. Prerequisite: consent of instructor. Same as Physics 206. Concurrent with Physics 106.

207 Chemistry for Physicists (4). Lecture, three hours; discussion, one hour. Introduction to fundamental concepts in molecular structure and reactivity: theory of bonding, valence and molecular orbitals; structure and reactivity in inorganic chemistry; elements in molecular group theory; nomenclature in organic chemistry; and survey of macromolecules. Same as Physics 207.

208 Mathematics for Chemists (4). Lecture, three hours; discussion, one hour. Applications of mathematics to physical and chemical problems. Calculus of special functions, complex variables and vectors; linear vector spaces and eigenvalue problems. Differential equations. Same as Physics 208.

209 Physics for Chemists (4). Lecture, three hours; discussion, one hour. An introduction to concepts of electrodynamics with special emphasis on applications to chemistry: vector analysis, electrostatics, magnetostatics, electrodynamics, electromagnetic waves, classical radiation theory, special relativity.

213 Chemical Kinetics (4) S. Lecture, three hours; discussion, one hour. Surveys gas phase and organic reaction mechanisms and their relationship to kinetic rate laws; treats the basic theory of elementary reaction rates. A brief presentation of modern cross-sectional kinetics is included. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

215 Inorganic Chemistry I (4). Lecture, three hours; discussion, one hour. Principles of modern inorganic chemistry with applications to chemical systems of current interest. Inorganic phenomena are organized into general patterns which rationalize observed structures, stabilities, and physical properties. Prerequisites: Chemistry 107 and 130A-B-C or 131A-B-C or equivalent.

216 Organometallic Chemistry (4). Lecture, three hours; discussion, one hour. Synthesis and reactivity of organometallic complexes with an emphasis on mechanisms. Topics include bonding and fluxional properties; metal-carbon single and multiple bonds; metal π-complexes. Applications to homogenous catalysis and organic synthesis are incorporated throughout the course. Prerequisite: Chemistry 107 or 215.

217 Physical Inorganic Chemistry (4). Lecture, three hours; discussion, one hour. General principles of the spectroscopy and magnetism of inorganic compounds. Characterization of inorganic complexes by infrared, near-infrared, visible, ultraviolet, NMR, EPR, EXAFS, and Mossbauer spectroscopies. Some necessary group theory developed. Prerequisite: Chemistry 215 or consent of instructor.

218 Metallobiochemistry (4). Lecture, three hours; discussion, one hour. A review of the biochemistry of metallic elements emphasizing: methods for studying metals in biological systems; the chemical basis for nature's exploitation of specific elements; structures of active sites; mechanisms; solid-state structures and devices; metals in medicine. Prerequisite: Chemistry 130A-B-C or equivalent.

219 Chemical Biology (4). Lecture, three hours; discussion, one hour. A survey of the organic chemistry underlying biological function. Introduction to chemical genetics, receptor-ligand interactions, small molecule agonists and antagonists, combinatorial synthesis, high throughput assays, molecular evolution, protein and small molecule design. Prerequisite: graduate standing or consent of instructor.

220 Bioorganic Chemistry (4). Lecture, three hours; discussion, one hour. Structure and function of biologically important macromolecules. Introduction to nucleic acids, protein structure, principles of molecular recognition, enzyme function, modeling, and engineering. Prerequisite: Chemistry 51A-B-C or H52A-B-C or equivalent.

221A Fundamentals of Molecular Biophysics (4) S. An overview of the principles and concepts in molecular biophysics. Topics covered include energy and entropy in biology, non-equilibrium reaction kinetics, random walks and molecular diffusion, molecular forces in biology. Prerequisites: undergraduate courses in physical chemistry and biochemistry, or consent of instructor.

221B Molecular Biophysics (4) F. A study of the biophysics of macromolecules and cells from a molecular perspective. Topics covered include protein folding, single molecule reaction kinetics, nucleic acid translation and transcription, molecular motors, cellular signal transduction. Prerequisites: Chemistry 221A and undergraduate courses in physical chemistry and biochemistry, or consent of instructor.

222 Natural Products (4) F. Lecture, three hours; discussion, one hour. Fundamentals of natural products chemistry are surveyed. Topics include classification schemes, biosynthesis, isolation and characterization, drug development from natural products, and chemical synthesis.

223 Biological Macromolecules (4). Lecture, three hours; discussion, one hour. Introduction to nucleic acid and protein structure, dynamics, and function. Topics include analytical methods, molecular evolution, folding, and catalysis. Same as Pharmaceutical Sciences 223.

225 Polymer Chemistry: Synthesis and Characterization of Polymers (4). Lecture, three hours; discussion, one hour. Structure of synthetic and natural polymers. Survey of modern polymer synthetic methods. Molecular weight and molecular weight distribution. Chain conformation and stereochemistry. Introduction to polymer characterization, chain models, and solution behavior. Prerequisite: undergraduate courses in organic and physical chemistry; or consent of instructor.

226 Polymer Materials: Polymer Structure-Property Relationships (4). Lecture, three hours; discussion, one hour. Chain length and copolymer sequence distributions. Polymer chain models and configurational statistics. Melting and glass transitions in crystalline and amorphous polymers. Network theory. Elasticity and viscoelasticity. Solution theory and phase equilibria. Mechanical and materials properties. Prerequisite: undergraduate courses in organic and physical chemistry; or consent of instructor.

227 Molecular Modeling (4). Laboratory, four hours. Concepts of molecular mechanics and electronic structure theory, and applications to practical chemical questions. Topics include prediction of conformational preference, reactivity, and selectivity. A hands-on course with numerous worked problems and examples using graphics workstations. Prerequisite: consent of instructor.

228 Electromagnetism (4). Lecture, three hours; discussion, one hour. Maxwell's equations, electrodynamics, electromagnetic waves and radiation, wave propagation in media, interference and quantum optics, coherent and incoherent radiation, with practical applications in interferometry, lasers, waveguides, and optical instrumentation. Prerequisite: consent of instructor. Same as Physics 228.

229A-B Computational Methods (4-4). Lecture, three hours; laboratory, six hours. Mathematical and numerical analysis using Mathematica and C programming, as applied to problems in physical science. Prerequisite: consent of instructor. Same as Physics 229A-B.

230 Classical Mechanics and Electromagnetic Theory (4). Lecture, three hours; discussion, one hour. The fundamentals of classical mechanics and electromagnetic theory are developed with specific application to molecular systems. Newtonian, Lagrangian, and Hamiltonian mechanics are developed. Boundary value problems in electrostatics are investigated. Multipole expansion and macroscopic media are discussed from a molecular viewpoint. Prerequisite: Chemistry 131A-B-C or equivalent.

231A-B-C Quantum Mechanics and Spectroscopy. Lecture, three hours; discussion, one hour.

231A Fundamentals of Quantum Mechanics (4) F. The postulates of quantum mechanics are discussed and applied to a variety of model problems. Prerequisites: Chemistry 131A-B-C or equivalent.

231B Applications of Quantum Mechanics (4) W. Approximate methods for solving atomic and molecular structure problems are developed, and the application of quantum mechanics to spectroscopy is introduced. Prerequisite: Chemistry 231A or consent of instructor.

231C Molecular Spectroscopy (4) S. Theory and techniques of spectroscopy as used for the study of molecular and condensed phase properties. Coherent time domain spectroscopies are covered. Prerequisite: Chemistry 231B or consent of instructor.

232A Thermodynamics and Introduction to Statistical Mechanics (4) W. Lecture, three hours; discussion, one hour. A detailed discussion from an advanced point of view of the principles of classical thermodynamics. The fundamentals of statistical mechanics. Topics include an introduction to ensemble theory, Boltzmann statistics, classical statistical mechanics, and the statistical mechanics of ideal gas systems. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

232B Advanced Topics in Statistical Mechanics (4) S. Continued discussion of the principles of statistical mechanics. Applications to topics of chemical interest including imperfect gases, liquids, solutions, and crystals. Modern techniques such as the use of autocorrelation function methods. Prerequisite: Chemistry 232A or equivalent.

232C Non-Equilibrium Statistical Mechanics (4) F. Lecture, three hours; discussion, one hour. Phenomenology of material processes, including: kinetic theories of transport and continuum, linear response theory, critical phenomena of phase transition, self-assembly, and nucleation. Prerequisite: consent of instructor.

233 Nuclear and Radiochemistry (4). Lecture, three hours. Advanced treatment (beyond that in Chemistry 170) of nuclear structure, nuclear reactions, and radioactive-decay processes. Introduction to nuclear activation analysis, isotope effects, radiation chemistry, hot-atom chemistry, nuclear age-dating methods, nuclear reactors, and nuclear power. Prerequisite: Chemistry 170 or equivalent or consent of the instructor.

234 Advanced Chemical Kinetics (4). Topics and format vary. Prerequisite: Chemistry 213 or consent of the instructor.

235 Molecular Quantum Mechanics (4) W. Lecture, three hours; discussion, one hour. Application of quantum mechanics to calculation of molecular properties. Electronic structure of molecules. Prerequisite: Chemistry 231A or equivalent.

236 Forces Between Molecules (4) F. Lecture, three hours; discussion, one hour. The nature and effects of non-covalent interactions between molecular systems. The focus is on properties of these interactions in condensed phases: macromolecular systems; particle-surface interactions.

237 Mathematical Methods in Chemistry (4). Lecture, three hours; discussion, one hour. Survey of essential math methods in chemistry. Topics include series and limits, complex analysis. Fourier and Laplace transforms, linear algebra and operators (theory and algorithms), differential equations, and probability concepts for stochastic processes.

241 Current Issues Related to Tropospheric and Stratospheric Processes (4) S. Lecture, three hours. Examination of current issues related to the atmosphere, including energy usage; toxicology; effects on humans, forest, plants, and ecosystems; particulate matter (PM10); combustion; modeling and meteorology; airborne toxic chemicals and risk assessment; application of science to development of public policies. Prerequisite: One course selected from Chemistry 245, Earth System Science 202, Engineering MAE164, Engineering MAE261, or consent of instructor. Same as Engineering MAE 260.

242A Physical and Geometrical Optics (4) W. Lecture, three hours; discussion, one hour. Focuses on the practical aspects of optics and optical engineering, starting at the fundamentals. Topics include geometrical optics, ray tracing, polarization optics, interferometers, and diffractive optics. Prerequisite: consent of instructor. Concurrent with Physics 134A.

242B Applied Optics (4) S. Lecture, three hours; discussion, one hour. Focuses on the treatment of a wide variety of tools and techniques used in optics, in particular in research. Subjects include an introduction to lasers, optical detection, coherent optics, spectroscopic techniques, and selected topics corresponding to the interest of the students. Prerequisite: Chemistry 242A or consent of instructor. Formerly Chemistry 242.

243 Advanced Instrumental Analysis (4) W. Lecture, three hours. Theory and applications of modern advanced instrumental methods of analysis. Includes data acquisition, storage, retrieval and analysis; Fourier transform methods; vacuum technologies, magnetic sector, quadrupole, and ion trap mass spectrometry; surface science spectroscopic methods; lasers and optics. Prerequisites: Chemistry 152 and Chemistry 130A-B-C or 131A-B-C.

245 Atmospheric Chemistry of the Natural and Polluted Troposphere (4) F. Lecture, three hours; discussion, one hour. Kinetics, mechanisms, and photochemistry of tropospheric reactions in the gas, liquid, and solid phases, and methods of analysis. Chemistry of photochemical oxidant formation and acid deposition, and applications to control strategies. Chemistry of toxic chemicals and indoor air pollution. Prerequisites: Chemistry 130A-B-C or 131A-B-C and Chemistry 151 and 151L or equivalent.

246 Separations and Chromatography (4). Lecture, three hours; discussion, one hour. Introduction to modern separation techniques such as gas chromatography, high-performance liquid chromatography, supercritical fluid chromatography, capillary electrophoresis, and field flow fractionation. Applications of these separation strategies are discussed.

247 Current Problems in Analytical Chemistry (4). Lecture, three hours; discussion, one hour. Surveys current research challenges in analytical chemistry. Topics include electrochemistry, chromatography, spectroscopy, and mass spectrometry.

248 Electrochemistry (4). Lecture, three hours; discussion, one hour. Fundamentals of electrochemistry including thermodynamics and the electrochemical potential, charge transfer kinetics, and mass transfer. Methods based on controlled potential and controlled current are described; the effects of slow heterogeneous kinetics and the perturbation caused by homogeneous chemistry are discussed.

249 Analytical Spectroscopy (4). Lecture, three hours; discussion, one hour. Advanced treatment of spectroscopic techniques and instrumentation. Atomic and molecular absorption, emission, and scattering processes and their application to quantitative chemical analysis are outlined. Puts different spectroscopic techniques in perspective and demonstrates most appropriate applications to analytical problems.

251 Special Topics in Organic Chemistry (1 to 4). Advanced topics in organic chemistry. Prerequisite: consent of instructor.

252 Special Topics in Physical Chemistry (1 to 4). Advanced topics in physical chemistry. Prerequisite: consent of instructor.

253 Special Topics in Inorganic Chemistry (1 to 4). Advanced topics in inorganic chemistry. Prerequisite: Chemistry 215 or consent of instructor.

254 Special Topics in Computational and Theoretical Chemistry (4). The subjects covered vary from year to year. May be repeated for credit as topics vary. Prerequisite: consent of instructor.

266 Current Topics in Chemical and Materials Physics (1). Lecture, one hour; discussion, one hour. The subjects covered vary from year to year. Connection between fundamental principles and implementations in practice in science, industry, and technology. Prerequisite: consent of instructor. Same as Physics 266.

271 Structural X-ray Crystallography (4). Lecture, three hours; discussion, one hour. The principles and practice of the determination of structures by single crystal x-ray diffraction techniques. Crystal symmetry, diffraction, structure solution and refinement. Opportunities for hands-on experience in structure determination. Prerequisite: Chemistry 130A-B-C or Chemistry 131A-B-C or equivalent.

272 Industrial Chemistry (4). Lecture, three hours; discussion, one hour. Scientific, economic, and environmental aspects of the top 50 industrially produced chemicals, including how they are obtained and used, present and future sources of energy and raw materials, and the effects of chemical manufacturing on the price structure of our economy. Prerequisite: consent of instructor.

273 Technical Communication Skills (2). Lecture, one hour; discussion, three hours. Development of effective communication skills, oral and written presentations, through examples and practice. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. Same as Physics 273.

280 Research (2 to 12) F, W, S. Supervised original research toward the preparation of a Ph.D. dissertation or M.S. thesis. Prerequisite: consent of the instructor.

290 Seminar (1) F, W, S. Weekly seminars and discussions on general and varied topics of current interest in chemistry. Prerequisite: graduate standing. May be repeated for credit.

291 Research Seminar (4). Detailed discussion of research problems of current interest in the Department. Format, content, and frequency of the course are variable. Prerequisite: consent of instructor.

292 Graduate Symposium (2) F. Students present public seminars on literature-based research topics in contemporary chemistry. Topics to be chosen by student and approved by instructor. May be repeated for credit as topics vary.

299 Independent Study (1 to 4) F, W, S. Prerequisite: consent of instructor.

399 University Teaching (1 to 4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF EARTH SYSTEM SCIENCE

3200 Croul Hall; (949) 824-8794
Michael L. Goulden, **Chair**

Faculty

Ralph J. Cicerone, Ph.D. University of Illinois, *Chancellor Emeritus and Professor Emeritus of Earth System Science* (atmospheric and analytical chemistry)

Ellen R. M. Druffel, Ph.D. University of California, San Diego, *Professor of Earth System Science* (biogeochemistry and oceanography)

Todd K. Dupont, Ph.D. Pennsylvania State University, *Assistant Professor of Earth System Science* (glaciology and ice sheet modeling)

James S. Famiglietti, Ph.D. Princeton University, *Professor of Earth System Science and of Civil and Environmental Engineering* (hydrology and climate)

Michael L. Goulden, Ph.D. Stanford University, *Department Chair and Professor of Earth System Science, and Professor of Ecology and Evolutionary Biology* (biosphere-atmosphere exchange, physiological ecology)

Kathleen R. Johnson, Ph.D. University of California, Berkeley, *Assistant Professor of Earth System Science* (geochemistry and paleoclimate)

Gudrun Magnusdottir, Ph.D. Colorado State University, *Professor of Earth System Science* (atmospheric dynamics and climate dynamics)

Adam C. Martiny, Ph.D. Technical University of Denmark, *Assistant Professor of Earth System Science and of Ecology and Evolutionary Biology* (environmental microbiology)
J. Keith Moore, Ph.D. Oregon State University, *Associate Professor of Earth System Science* (ocean ecosystem dynamics and biogeochemistry)
Claudia Pasquero, Ph.D. Politecnico di Torino, *Assistant Professor of Earth System Science* (fluid dynamics)
Diane E. Pataki, Ph.D. Duke University, *Associate Professor of Earth System Science and of Ecology and Evolutionary Biology* (global change biology)
Michael Prather, Ph.D. Yale University, *Director of the UCI Environment Institute, Professor of Earth System Science, and Fred Kavli Chair in Earth System Science* (mathematical modeling of atmospheric chemistry, and climate)
Francois W. Primeau, Ph.D. Massachusetts Institute of Technology/Woods Hole Oceanographic Institution, *Associate Professor of Earth System Science* (physical oceanography and climate dynamics)
James T. Randerson, Ph.D. Stanford University, *Professor of Earth System Science and of Ecology and Evolutionary Biology* (global biogeochemical cycles)
William S. Reeburgh, Ph.D. The Johns Hopkins University, *Professor Emeritus of Earth System Science* (geochemistry and biogeochemistry)
Eric Rignot, Ph.D. University of Southern California, *Professor of Earth System Science* (glaciology, remote sensing, and cryosphere)
Eric S. Saltzman, Ph.D. University of Miami, *Professor of Earth System Science* (marine and atmospheric chemistry)
Susan E. Trumbore, Ph.D. Columbia University, *Professor of Earth System Science* (geochemistry and biogeochemistry)
Isabella Velicogna, Ph.D. University of Trieste, *Assistant Professor of Earth System Science* (remote sensing, cryosphere, climate change, and geodesy)
Laurel L. Wilkening, Ph.D. University of California, San Diego, *Chancellor Emerita and Professor Emerita of Earth System Science* (planetary science)
Jin-Yi Yu, Ph.D. University of Washington, *Associate Professor of Earth System Science* (atmospheric sciences and climate dynamics)
Charles S. Zender, Ph.D. University of Colorado, *Associate Professor of Earth System Science* (atmospheric physics, aerosols, and climate)

Affiliated Faculty

Steven D. Allison, Ph.D Stanford University, *Assistant Professor of Ecology and Evolutionary Biology and of Earth System Science* (microbial enzymes, theoretical ecology, and biogeochemistry)
Donald R. Blake, Ph.D. University of California, Irvine, *Department Chair and Professor of Chemistry and Professor of Earth System Science* (atmospheric and analytical chemistry, and radiochemistry)
Rafael L. Bras, Sc.D. Massachusetts Institute of Technology, *Dean of The Henry Samueli School of Engineering and UCI Distinguished Professor of Civil and Environmental Engineering and of Earth System Science* (hydrology, eco-hydrology, hydro-climatology and hydro-meteorology)
Carl A. Friehe, Ph.D. Stanford University, *Professor Emeritus of Mechanical and Aerospace Engineering* (fluid mechanics, turbulence, micrometeorology, instrumentation)
F. Sherwood Rowland, Ph.D. University of Chicago, *Donald Bren Research Professor Emeritus of Chemistry and Earth System Science* (atmospheric and analytical chemistry, and radiochemistry)
Soroosh Sorooshian, Ph.D. University of California, Los Angeles, *Director of the Center for Hydrometeorology and Remote Sensing (CHRS) and UCI Distinguished Professor of Civil and Environmental Engineering and of Earth System Science* (hydrometeorology, remote sensing, water resources)
Kathleen K. Treseder, Ph.D. Stanford University, *Associate Professor of Ecology and Evolutionary Biology and of Earth System Science* (microbial biogeochemistry)

The goal of the Department of Earth System Science is to increase the scientific understanding of the Earth as a coupled system of atmosphere, ocean, and land. Earth System Science is inherently interdisciplinary in scope, linking the fields of oceanography, atmospheric and terrestrial sciences, climatology, hydrology, biology, physics, and chemistry to understand the climate system and global biogeochemical cycles. These fields have traditionally been taught in different departments, which has hindered students who want to learn about all of the disciplines that interact to control the global environment. At the undergraduate level, courses are designed to educate both science and non-science majors in the basic processes driving the Earth system, including elemental cycling, Earth's climate, and global environmental problems.

Undergraduates can pursue a B.S. degree in Earth and Environmental Sciences, a B.A. degree in Earth and Environmental Studies, or a minor in Earth and Atmospheric Sciences. In addition, undergraduates who are interested in teaching science at the secondary level may complete an optional concentration in Geosciences Education with Secondary Teaching Certification. This option is available for students pursuing either the B.S. or the B.A. degree. The Department also offers a group of lower-division general education courses appropriate for non-science majors. At the graduate level, the Department offers the M.S. and Ph.D. degrees in Earth System Science. Graduate study emphasizes laboratory, field, and modeling studies of global change in the environment through study of physical, chemical, and biological processes within and between the atmosphere, oceans, and terrestrial systems.

Undergraduate Programs

BACHELOR OF SCIENCE MAJOR IN EARTH AND ENVIRONMENTAL SCIENCES

The objective of this major is to prepare students to understand the rapidly evolving field of Earth System Science. Students work with faculty and graduate students to obtain a quantitative understanding of the Earth system. The major consists of a set of required core courses and a group of elective courses drawn from offerings in Physical Sciences, Biological Sciences, Engineering, and Social Ecology. The core courses provide a broad scientific foundation of the physical, chemical, and biological principles needed to understand the complex interactions of the atmosphere, ocean, and land that drive the Earth's climate and biogeochemical cycles. Majors develop the analytical and quantitative skills needed to understand sensitive environmental issues.

In their junior and senior years, students are encouraged to focus on a particular area within Earth System Science and to choose electives that build a coherent core of knowledge. Focus areas include but are not limited to climatology, biogeochemical cycles, oceanography, hydrology, terrestrial sciences, atmospheric sciences, environmental policy and planning, and resource management. Alternatively, the focus could be on chemical, physical, or biological processes across these disciplines. This flexible program is designed to accommodate the particular interests of each student. Majors are encouraged to become directly involved in scientific research working with a faculty member by taking Earth System Science 199 for several quarters. The UCI upper-division writing requirement may be fulfilled by taking Earth System Science 199 and 198 in the senior year.

Many students go on to graduate school programs and careers as research scientists in academic, public, or private institutions. Students are prepared to enter the workforce directly as scientists in a diverse array of fields including environmental policy and planning, environmental consulting, air quality monitoring and assessment, laboratory analysis, scientific research, science education, natural resource management, wildlife management, conservation and environmental protection, and water resource management.

Admission to the Earth and Environmental Sciences Major

Students may be admitted to the Earth and Environmental Sciences major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office and at http://www.changeofmajor.uci.edu. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus and one year of *either* general chemistry (with laboratory) or calculus-based physics (with laboratory).

REQUIREMENTS FOR THE B.S. DEGREE IN EARTH AND ENVIRONMENTAL SCIENCES

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements

A. Earth System Science 25*, 51, 53, 55, 114, 116, 191; Mathematics 2A-B and 2D or 2J; Chemistry 1A-B-C and 1LB-LC, or H2A-B-C and H2LA-LB-LC; Physics 3A-B-C and 3LB-LC, *or* 7A-B-E, and 7LA-LB, *or* 7C-7LC-7E.

* Other approved courses may be substituted for Earth System Science 25 by petition.

B. Seven electives from the following (at least four must be Earth System Science courses): all four-unit upper-division Earth System Science courses except 114, 116, and 198 or H198 (199 or one quarter of H199A-B-C may count only once toward the elective requirement); Chemistry 51A and 51LA, 51B and 51LB, 51C, H52A and H52LA, H52B and H52LB, H52C, 130A, 130B, 130C,131A, 131B, 131C; Physics 51A, 51B, 115A, 120, 134A, 137, 144, 145; Mathematics 2D or 2J (may be counted only once), 3A or 6G, 3D, 105A, 112A, 115, 131A, 131B, 131C; Mechanical and Aerospace Engineering (MAE) 91, 130A, 164, 180, 185; Civil and Environmental Engineering (CEE) 156, 162, 171, 172, 176, 178; Biological Sciences 93, 94, 98, D105, E106, E167, E178, E179, E179L, E186, E189, M133; Criminology, Law and Society C148; Planning, Policy, and Design 133, 136, 138, 139; Public Health 161; Computing Skills (one of the following may be counted toward degree): Information and Computer Science 21, Engineering EECS10, Engineering MAE10, Physics 53, or an approved programming course.

Sample Program — Earth and Environmental Sciences

FALL	WINTER	SPRING
Freshman		
Mathematics 2A*	Mathematics 2B*	Mathematics 2D or 2J*
Chemistry 1A*	Chemistry 1B*, 1LB*	Chemistry 1C*, 1LC*
ESS 25*	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Sophomore		
ESS 51*	ESS 53*	ESS 55*
Physics 3A*	Physics 3B*, 3LB*	Physics 3C*, 3LC*
Gen. Ed. Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Junior		
ESS 116*	ESS Elective*	ESS 114*
ESS 191*	Approved Elective*	ESS Elective*
Gen. Ed./Elective	Gen. Ed./Elective	Elective
Elective	Elective	Elective
Senior		
ESS Elective*	ESS Elective*	ESS Elective*
Approved Elective*	Elective	Elective
Elective	Elective	Elective
Elective	Elective	Elective

* Fulfills major requirement.

Some students (particularly transfer students) take Earth System Science 51, 53, and 55 in the junior year.

Concentration in Geosciences Education with Secondary Teaching Certification

This concentration allows students pursuing the B.S. in Earth and Environmental Sciences to earn a bachelor's degree and complete the required course work and field experience for a California Preliminary Single Subject Teaching Credential at the same time. In addition to the requirements listed above, students must complete the following courses: Physical Sciences 5 and 105, Chemistry or Physics 193, Logic and Philosophy of Science 60, Education 55, 109, 143A, 143B, 148, and two quarters of 158. With careful, early planning, it is possible for students to complete the bachelor's degree and the secondary teaching certification in four years. For additional information about teacher certification requirements and enrollment procedures, see page 384. Interested students are strongly encouraged to contact the Physical Sciences Student Affairs Office or the Cal Teach Resource and Advising Center.

Sample Program – Concentration in Geosciences Education with Secondary Teaching Certification

FALL	WINTER	SPRING
Freshman		
Math 2A	Math 2B	Math 2D or 2J
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
ESS 25	Gen. Ed.	Gen. Ed.
Elective	Physical Sciences 5	Elective
Sophomore		
ESS 51	ESS 53	ESS 55
Physical Sciences 105	Physics 3B, 3LB	Physics 3C, 3LC
Gen. Ed.	Chemistry 193	Logic & Philo. Sci. 60
Physics 3A		Gen. Ed.
Junior		
ESS 116	ESS Elective	ESS 114
ESS 191	Approved Elective	ESS Elective
Education 55	Education 143A	Education 143B
Gen. Ed.	Elective	
Senior		
ESS Elective	ESS Elective	ESS Elective
Education 148	Education 109	Approved Elective
Gen. Ed.	Education 158	Education 158

HONORS PROGRAM IN EARTH SYSTEM SCIENCE

The Honors Program in Earth System Science provides an opportunity for selected students majoring in Earth and Environmental Sciences to pursue research with faculty in the Department during their senior year. Admission to the program is based on an application normally submitted by the sixth week of the spring quarter during the junior year. To be considered, a student must have satisfied the following requirements: (1) completion of all mathematics, chemistry, and physics requirements for the major; (2) completion of ESS 51, 53, and 55; (3) achievement of an overall GPA at UCI of at least 3.3; and (4) achievement of a GPA in Earth System Science courses of 3.4. Students must also demonstrate potential for carrying out research of honors quality, as judged by the Earth System Science faculty member who will supervise their research. Students in this program enroll in Honors Research in Earth System Science (H199A-B-C) throughout their senior year and submit a formal thesis late in the spring quarter (H198).

If the thesis is deemed honors quality by the ESS faculty, and the student's final GPA is above 3.3, the student then graduates with Departmental Honors in Earth and Environmental Sciences.

BACHELOR OF ARTS MAJOR IN EARTH AND ENVIRONMENTAL STUDIES

Environmental issues pertaining to resource limitation, pollution, biodiversity loss, and climate change are of increasing societal concern. There is a continuing need for environmental professionals with training in the natural sciences, social sciences, economics, and public policy in the government, nonprofit, and private sectors. The objective of the B.A. degree program is to train and

educate students interested in environmental problem solving by linking an understanding of natural science with socioeconomic factors and public policy. The curriculum combines a quantitative understanding of Earth science, chemistry, and biology with studies of social science, policy, and macro- and microeconomics to provide a foundation for careers in environmental policy, resource management, education, environmental law, and related fields.

In their junior and senior years, students are encouraged to focus on a particular area within environmental studies and to choose electives that build a coherent core of knowledge. Focus areas include but are not limited to environmental policy and planning, resource management, conservation biology and ecology, environmental economics, or environmental sociology. Alternatively, the focus could be on biological, chemical, or socioeconomic processes across these disciplines. This flexible program is designed to accommodate the particular interests of each student. Students participate in a senior capstone project or senior thesis that involves original research with faculty, an internship at a local environmental agency/organization, or a detailed review of an environmental issue. The UCI upper-division writing requirement may be fulfilled by taking Earth System Science 199 and 198 or 190A-B-C in the senior year.

Admission to the Earth and Environmental Studies Major

Students may be admitted to the Earth and Environmental Studies major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office and at http://www.changeofmajor.uci.edu. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of either general chemistry (with laboratory) or biology (with laboratory).

REQUIREMENTS FOR THE B.A. DEGREE IN EARTH AND ENVIRONMENTAL STUDIES

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements

A. Earth System Science 1, 3, 5, 7 or 25, 60A-B-C, 114, 180 and 182, 190A-B-C or two quarters of 199 or H199 followed by 198 or H198.

B. Chemistry 1A-B-C and 1LB-LC or H2A-B-C and H2LA-LB-LC, Biological Sciences 93 and 94.

C. Three courses from the following: Mathematics 2A-B, 4, 7; Social Science 9A-B-C; Economics 15A-B; Earth System Science 116, 134.

D. Three courses from the following: Sociology 1, 2, or 3; Economics 13, 20A-B; Planning, Policy, and Design 4.

E. Two courses from the following: Biological Sciences E189; Planning, Policy, and Design 138, 139, or 140.

F. Three electives each from the following three categories:

1. Any upper-division, 4-unit course in Earth System Science (199 may count only once toward elective requirements); courses may not be used as electives if counted toward degree requirements.
2. Chemistry 51A and 51LA, 51B and 51LB, 51C, H52A and H52LA, H52B and H52LB, H52C; Biological Sciences 20, 55, 65, 97, 98, 99, 100L, E106, E138; E150; E151; E160; E161L; E166; E167; E172; E174; E175; E176; E178; E179; E179L; E182; E184; E186; Physics 3A, 3B, 3C, 7A, 7B, 7C, 14, 20A, 20B, 20C, 20D.
3. Economics 100A-B-C, 141A-B-C, 142A-B-C, 144A-B-C, 144T, 145E, 145L; Sociology 31, 43, 44, 110, 141, 147A, 171.

Other courses may be substituted for approved electives by petition.

Concentration in Geosciences Education with Secondary Teaching Certification

This concentration allows students pursuing the B.A. in Earth and Environmental Studies to earn a bachelor's degree and complete the required course work and field experience for a California Preliminary Single Subject Teaching Credential at the same time. With careful, early planning, it is possible for students to complete the bachelor's degree and the secondary teaching certification in four years. For additional information about teacher certification requirements and enrollment procedures, see page 384. Interested students are strongly encouraged to contact the Physical Sciences Student Affairs Office or the Cal Teach Resource and Advising Center.

Departmental Requirements

A. Earth System Science 1, 3, 5, 7 or 25, 60A-B-C, 114, 180 and 182.

B. Chemistry 1A-B-C and 1LB-LC or H2A-B-C and H2LA-LB-LC, Biological Sciences 93 and 94.

C. Three courses from the following: Mathematics 2A-B, 4, 7; Social Science 9A-B-C; Economics 15A-B; Earth System Science 116, 134.

D. Two courses from the following: Sociology 1, 2, or 3; Economics 13, 20A-B; Planning, Policy, and Design 4.

E. One course from the following: Biological Sciences E189; Planning, Policy, and Design 138, 139, or 140.

F. Three electives each from the following three categories:

1. Any upper-division, 4-unit course in Earth System Science (199 may count only once toward elective requirements); courses may not be used as electives if counted toward degree requirements.
2. Chemistry 51A and 51LA, 51B and 51LB, 51C, H52A and H52LA, H52B and H52LB, H52C; Biological Sciences 20, 55, 65, 97, 98, 99, 100L, E106, E138; E150; E151; E160; E161L; E166; E167; E172; E174; E175; E176; E178; E179; E179L; E182; E184; E186; Physics 3A, 3B, 3C, 7A, 7B, 7C, 14, 20A, 20B, 20C, 20D.
3. Economics 100A-B-C, 141A-B-C, 142A-B-C, 144A-B-C, 144T, 145E, 145L; Sociology 31, 43, 44, 110, 141, 147A, 171.

G. Physical Sciences 5 and 105, Chemistry or Physics 193, Logic and Philosophy of Science 60, Education 55, 109, 143A, 143B, 148, and two quarters of 158.

NOTE: The major is open to all students except Earth and Environmental Sciences B.S. majors and Earth and Atmospheric Sciences minors.

Sample Program — Concentration in Geosciences Education with Secondary Teaching Certification

FALL	WINTER	SPRING
Freshman		
ESS 7	Math. 2A	Math. 7 or Stats. 7
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Gen. Ed.	Gen. Ed.	Gen. Ed.
Physical Sciences 5		
Sophomore		
ESS 60A	ESS 60B	ESS 60C
Physical Sciences 105	Approved Elective	Approved Elective
ESS 116	Chemistry or Physics 193	Log. & Philo. Sci. 60
Sociology 1	Sociology 3	Approved Elective
Junior		
Bio. Sci. 93	Bio. Sci. 94	ESS 114
Approved Elective	Approved Elective	Approved Elective
Education 55	Education 143A	Education 143B
	ESS 180	ESS 182
Senior		
Approved Elective	Approved Elective	Gen. Ed.
Bio. Sci. E189	Education 109	Approved Elective
Education 148	Education 158	Education 158

MINOR IN EARTH AND ATMOSPHERIC SCIENCES

The minor is open to all students (except B.S. in Earth and Environmental Sciences and B.A. in Earth and Environmental Studies majors), but it is primarily designed for students in the natural sciences and engineering who wish to explore interdisciplinary problems and broaden their studies to include the application of their fields to understanding the Earth system.

NOTE: All of these courses have prerequisites. Students pursuing the minor should plan to fulfill all prerequisites prior to enrolling in these courses.

Requirements for the Minor

Earth System Science 51, 53, 55, or Earth System Science 60A, 60B, 60C, plus four electives chosen from the approved elective list for the B.S. in Earth and Environmental Sciences major, at least two of which must be Earth System Science courses.

Graduate Program

Applicants to the Earth System Science Ph.D. program should have a broad quantitative scientific background, with an undergraduate degree in physical or natural science or related fields such as applied mathematics and engineering. Undergraduate preparation should involve mathematics including differential equations, a year-long sequence of physics and of chemistry, and courses in general biology, ecology, or geology. Entering graduate students plan their courses and research with the help of the Graduate Advisor. Students are admitted to the Ph.D. program only; the master's degree is awarded upon progress to the Ph.D.

To complete the course requirements for the Ph.D. program, a minimum of 19 approved graduate-level courses, including the core curriculum, must be completed with an average grade of B or better. All courses must be approved by the student's advisor. The core curriculum consists of Earth System Science 201, 203, 211, 213, 215, 220, 223, 227, 229, 231, 241, 261, 262, 263, 265, and 298A-B-C. These courses are described below. Students are also expected to participate in the Earth System Science seminar. Additionally, Ph.D. students are required to complete a teaching assistant training program and to have a minimum of two quarters of experience as a teaching assistant, provided opportunities are available.

Academic Senate regulations specify a minimum period of residence of six quarters for Ph.D. candidates. Enrollment in a minimum of 12 units of graduate/upper-division course work per quarter is required. Registration in every regular academic session is necessary until all requirements for the degree have been completed, unless a formal Leave of Absence is granted by the Graduate Division. All Ph.D. requirements must be completed within 15 quarters in residence (five years), excluding summer quarters. Exceptions must be put to a vote of the Earth System Science faculty. The maximum time permitted is seven years.

A departmental written Comprehensive Examination for all eligible ESS students is administered at the end of spring quarter. This examination determines the student's readiness to begin research for the dissertation. An oral Comprehensive Examination is offered after the written examination and provides an opportunity to clarify questions that arise from the student's performance on the written examination. Both the written and oral examinations are administered by the ESS Comprehensive Examination Committee. The examinations emphasize breadth, general knowledge, and the ability to integrate and use information covered in the core curriculum and other course work.

Following completion of the Comprehensive Examination, those students who receive a recommendation to continue Ph.D. work will pursue research on a potential dissertation topic and then take the Advancement to Candidacy Examination. This oral examination is given by a faculty committee, including extra-departmental faculty. The normative time for advancement for candidacy is two years.

A dissertation based on original research and demonstrating critical judgment, intellectual synthesis, creativity, and clarity in written communication is required for the Ph.D. degree. The dissertation must summarize the results of original research performed by the student under the supervision of a faculty member of the Department. The criterion of acceptability of a dissertation is that its contents be judged by the committee as suitable for publication in a peer-reviewed scientific journal of high editorial standards. The dissertation may be a compilation of published papers or manuscripts accepted for publication, so long as a major proportion of the material has been produced independently by the candidate. The format and content are approved by the Dissertation Committee, and University requirements for style, format, and appearance are met.

The master's degree is awarded only to students admitted to the Ph.D. program who have completed a total of 19 courses, met the three-quarter residency requirement, and completed the Comprehensive Examination.

A summary of the requirements follows.

DOCTOR OF PHILOSOPHY IN EARTH SYSTEM SCIENCE

1. Completion of course work (19 courses, including core courses)
2. Six quarters in residence at UCI
3. Completion of the teaching and seminar requirements
4. Completion of the Comprehensive Examination, with recommendation to continue for the Ph.D.
5. Pass the Advancement to Candidacy Examination
6. Presentation of an open research seminar
7. Submission of an acceptable doctoral dissertation and formal defense

MASTER OF SCIENCE IN EARTH SYSTEM SCIENCE

1. Completion of course work (19 courses, including core courses)
2. Three quarters in residence at UCI
3. Completion of the Comprehensive Examination

Courses in Earth System Science

(Schedule of Classes **designation: EarthSS)**

Lower-division undergraduate course offerings emphasize an understanding of the basic science involved in global change of the Earth's atmosphere, oceans, and biosphere and soils. Any three courses selected from Earth System Science 1, 3, 5, 7, 11, 13, 15, and H90 will satisfy the science and technology general education requirement. Lower-division Earth System Science courses also are core or elective courses in the interdisciplinary minor in Global Sustainability; see the Interdisciplinary Studies section of this *Catalogue* for information.

Upper-division courses are particularly appropriate as electives for students majoring in the physical or biological sciences, or engineering, with an interest in applying physics, chemistry, and biology to study the Earth's atmosphere, oceans, biosphere, and climate.

LOWER-DIVISION

1 The Physical Environment (4) F. Covers the origin and evolution of the Earth, its atmosphere, and oceans, from the perspective of biogeochemical cycles, energy use, and human impacts on the Earth system. Earth System Science 1 and 25 may not both be taken for credit. **(II)**

3 Oceanography (4) S. Examines circulation of the world oceans and ocean chemistry as it relates to river, hydrothermal vent, and atmospheric inputs. Geological features, the wide variety of biological organisms, and global climate changes, such as greenhouse warming, are also studied. **(II)**

5 The Atmosphere (4) W. The composition and circulation of the atmosphere with a focus on explaining the fundamentals of weather and climate. Topics include solar and terrestrial radiation, clouds, and weather patterns. **(II)**

7 Geology (4) F. Introduction to basic physical geology: rocks and minerals, plate tectonics, volcanoes, earthquakes, earth surface processes, earth resources, geologic time, major events in earth history. Laboratory work and optional field trip involve hands-on study of geologic materials, maps, and exercises pertaining to geologic processes. **(II)**

11 Climate Change and Policy (4). Develops an understanding of the physical basis behind global climate change; examines how human activities cause it, looks to future rates and impacts of global warming, and reviews the international conventions, protocols, and scientific assessments of climate change. **(II)**

13 Global-Change Biology (4) W. Addresses ways in which humans are altering the global environment, with consequences for the ecology of animals, plants, and microbes. Discussion on how these biologically oriented questions relate to human society, politics, and the economy. Same as Biological Sciences 9K. **(II)**

15 Introduction to Global Climate Change (4). Introduction of scientific, technological, environmental, economic, and social aspects underlying the threat and understanding of global climate change. Human and natural drivers of climate. Impacts of climate on natural, managed, and human systems, including their vulnerability and ability to adapt. **(II, VIII)**

25 Introduction to Earth and Environmental Sciences (4) F. Covers the origin and evolution of the Earth, its atmosphere, and oceans, from the perspective of biogeochemical cycles, and human impacts. Corequisite: Mathematics 2A or consent of instructor. Open only to Physical Sciences, Biological Sciences, and Engineering majors. Earth System Science 25 and 1 may not both be taken for credit.

51 Land Interactions (4) F. The role of terrestrial processes in the Earth system. Provides an introduction to ecosystem processes that regulate the cycling of energy, water, carbon, and nutrients. Analysis of the impact of human activities. Corequisites: Mathematics 2B and Physics 3A or 7A or 7C. Prerequisite: Chemistry 1C.

53 Ocean Biogeochemistry (4) W. Overview of oceanography for those interested in Earth system science. Focus is on physical, chemical, and biological processes that drive biogeochemical cycling in the oceans. Coastal systems also reviewed, with emphasis on California waters. Corequisites: Mathematics 2B and Physics 3B or 7B or 7C. Prerequisite: Chemistry 1C.

55 Earth's Atmosphere (4) S. Composition, physics, and circulation of Earth's atmosphere with an emphasis on explaining the role of atmospheric processes in shaping the climate system. Topics include: atmospheric composition, the global energy balance, radiative transfer and climate, atmospheric circulation and climate sensitivity. Corequisites: Mathematics 2B or a score of 4 or 5 on the Advanced Placement Calculus BC examination, Physics 3B or 7B or 7C.

60A Fundamental Processes in Earth and Environmental Studies (4) F. An introduction to the physical environment, biological systems, and human-environment interactions. Explores physical principles such as fluid transport and reaction rates using environmental examples as well as principles of populations, ecosystems, carrying capacity, and sustainable use of resources. Prerequisite: Chemistry 1B or H2B.

60B Local and Regional Environmental Issues (4) W. An introduction to common environmental issues using case studies from Orange County and California. Studies natural hazards as well as human-caused problems with air quality, water quality, coastal pollution, ecosystem degradation, and urban climate. Prerequisites: Earth System Science 60A or 25 and Chemistry 1C or H2C.

60C Global Environmental Issues (4) S. An overview of global environmental changes including climate change, sea level rise, biodiversity loss, land and ocean degradation, and resource depletion. Discusses scientific, cultural, historical, and policy dimensions of these issues as well as possible solutions. Prerequisites: Earth System Science 60A or 25 and Chemistry 1C or H2C.

H90 The Idiom and Practice of Science (4). A series of fundamental and applied scientific problems are addressed, illustrating the pervasive role of mathematical analysis. Topics may include energy utilization, the climate system, the "greenhouse effect," ozone depletion and air pollution, ecological consequences of water pollution, nutrient cycles. Open only to members of the Campuswide Honors Program or consent of instructor. **(II)**

UPPER-DIVISION

101 Paleoclimatology (4) S. Explores past changes in Earth's climate. Topics include tools and techniques used to reconstruct past climate from natural archives; records and mechanisms of past climate changes throughout Earth history; and lessons learned from the paleo-record for predication of future climate. Prerequisites: Earth System Science 60A-B-C, or 51, 53, 55.

112 Global Climate Change and Impacts (4) F. Observations over the twentieth century show extensive changes in atmospheric composition, climate and weather, and biological systems that have paralleled industrial growth. Evidence of globally driven changes in these biogeochemical systems is studied, including projected impacts over the twenty-first century. Prerequisites: Earth System Science 60A-B-C, or 51, 53, 55.

114 Earth System Science Laboratory and Field Methods (4) S. Introduction to methods used to measure exchange of gases and energy between the atmosphere and terrestrial ecosystems. Laboratories include data acquisition and isotopic and chromatographic analysis. Field measurements at UCI's Marsh Reserve include microclimate, hydrology, trace-gas exchange, and plant growth. Prerequisite: Earth System Science 51 or 60A.

116 Data Analysis for Earth Sciences (4) F. Analysis and interpretation of geophysical data, including functional fitting, probability density functions, and multidimensional time-series methods, with applications in atmospheric, oceanic, and biogeochemical sciences.

118 Advanced Data Analysis and Modeling (4) S. Covers advanced data analysis and modeling techniques for applications within Earth system science. These applications will come from variety of Earth science (writ large) problems. Students will gain programming proficiency by implementing computational methods in MATLAB. Prerequisites: Earth System Science 116 and Mathematics 2B.

122 Atmospheric Dynamics (4) W. Fluid dynamical processes that determine the large-scale flow of the atmosphere and ocean. Most important are interactions between the density stratification and the Coriolis force associated with Earth's rotation. Topics include circulation, vorticity, planetary waves and their role in climate. Prerequisites: Earth System Science 55 and Mathematics 2D and Physics 7B or 7C.

124 Weather and Meteorology (4) W. Provides an overview of weather systems in midlatitudes and tropics. The fundamental dynamics possible for these weather systems are described. Elementary weather analysis and forecasting techniques are introduced. Prerequisite: Earth System Science 55 or 60A.

130 Physical Oceanography (4) W. Physical processes that determine the distribution of water properties such as salt and temperature. Fluid-dynamical underpinnings of physical oceanography. Wave motions. The wind-driven and thermohaline circulation. Similarities and differences between ocean and atmosphere dynamics. Prerequisites: Mathematics 2D and Physics 7B or 7C.

132 Terrestrial Hydrology (4) S. Comprehensive treatment of modern conceptual and methodological approaches to hydrological science. Combines qualitative understanding of hydrological processes with quantitative representation, approaches to measurement, and treatment of uncertainty. Major components of the hydrological cycle and their linkages within the coupled Earth system. Prerequisite: Earth System Science 60A or 51 or consent of instructor. Concurrent with Earth System Science 232.

134 Fundamentals of GIS for Environmental Sciences (4). Introduction to Geographic Information Systems (GIS). Topics include fundamentals of cartography, creating/editing GIS data, linking spatial and tabular data, georeferencing, map projections, geospatial analysis, spatial statistics and the development of GIS models. Examples from hydrology, ecology, and geology. Prerequisite: Earth System Science 51 or 53 or 60A or 60C.

138 Satellite Remote Sensing for Earth System Science (4) S. Satellite remote sensing data are increasingly used to study the Earth system. Provides an overview of the principles behind remote sensing, and the types of satellite data available for study of the oceans, land, and atmosphere. Prerequisite: Earth System Science 51 or 53 or 60A or 60C.

142 Atmospheric Chemistry (4) S. Chemistry of the troposphere and stratosphere. Topics include: processes controlling the lifetime and reaction pathways of chemicals in the atmosphere, the role of the atmosphere in biogeochemical cycles, and interactions between atmospheric chemistry and the physical climate system. Prerequisites: Chemistry 1C or H2C, Mathematics 2B.

144 Marine Geochemistry and Biogeochemistry (4) S. Processes controlling the major and minor element composition of seawater and element distributions in the ocean. Gas exchange, carbon dioxide system, stable isotopes, radionuclides as tracers and chronometers, particle fluxes, organic geochemistry, sediment geochemistry, global cycles of biogeochemically important elements. Prerequisites: Earth System Science 53 or 60A and 60C.

150 Laboratory Methods in Earth System Science (4) W. Introduction to analytical methods used in Earth science research. Lectures cover theory and applications of each method. Laboratories cover sample preparation, experimental design, standardization and calibration, operation of analytical instruments (mass spectrometers, gas chromatographs, and spectrophotometers), and analysis of data. Prerequisite: consent of instructor. Concurrent with Earth System Science 250.

164 Ecosystems Ecology (4) F, W, S. A mechanistic perspective on ecosystem processes. Covers ecosystem development, element cycling, and interactions with plants and microbes. The role of ecosystems in environmental change is also addressed. Prerequisite: Chemistry 51C. Same as Biological Sciences E118. Concurrent with Earth System Science 264.

168 Physiological Plant Ecology (4) F. An examination of the interactions between plants and their environment. Emphasis on the underlying physiological mechanisms of plant function, adaptations and responses to stress, and the basis of the distribution of plants and plant assemblages across the landscape. Prerequisites: Earth System Science 51 or 60A and 60C or Biological Sciences E106. Same as Biological Sciences E127. Concurrent with Earth System Science 268.

170 Environmental Microbiology (4) F. Establishes a fundamental understanding of microbes living in the environment, including their distribution, diversity, and biochemistry, and discusses how they attribute to global biogeochemical cycles. Prerequisites: Earth System Science 53 or 60A and 60C or Biological Sciences E106. Same as Biological Sciences E163. Concurrent with Earth System Science 270.

180 Environmental Sustainability I (4) W. Provides an introduction to sustainability from different points of view; historical, scientific, political, ethical, and economic. Same as Planning, Policy, and Design 131.

182 Environmental Sustainability II (4) S. Investigates how sustainability can be implemented in a variety of contexts including water, energy, nonrenewable resources, biodiversity, and urban policy, and also how it could be measured. Same as Planning, Policy, and Design 132.

190A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 190A-B, grade for sequence given upon completion of 190C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 191A-B and Social Ecology 186A-B.

190C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Earth System Science 190A-B and satisfaction of the lower-division writing requirement. Same as Biological Sciences 191C and Social Ecology 186C.

191 Introduction to Research in Earth System Science (1) F. A series of weekly presentations by Earth System Science faculty describing ongoing research in their laboratories. The goals are to introduce students to the range of research topics and methods in Earth System Science and to the research opportunities available within the Department. Prerequisites: upper-division standing or consent of instructor; limited to majors in Earth and Environmental Sciences or minors in Earth and Atmospheric Sciences.

192 Careers in Earth System Science (1) W. A series of weekly presentations by business and government leaders in environmental fields, describing the goals of their organization and typical career trajectories for entry-level science majors within their organization. Makes students aware of the diversity of career opportunities available. Prerequisites: upper-division standing or consent of instructor; limited to majors in Earth and Environmental Sciences or minors in Earth and Atmospheric Sciences.

198 Senior Thesis in Earth System Science (4) S. Students receive guidance on the effective oral and written communication of research results. Students prepare and present a seminar, a poster, and a written thesis describing their research in Earth System Science. Prerequisites: successful completion of two quarters of Earth System Science 199 or comparable research experience with consent of instructor; successful completion of the lower-division writing requirement. Intended for seniors majoring in Earth and Environmental Sciences. Earth System Science 198 and H198 may not both be taken for credit.

H198 Honors Thesis in Earth System Science (4) S. Students receive guidance on effective written and oral communication of research results. Students prepare and present a seminar, poster, and written thesis describing their honors research in Earth System Science. Corequisite: Earth System Science H199C. Prerequisites: satisfactory completion of the lower-division writing requirement; Earth System Science H199A-B; consent of faculty sponsor; acceptance and enrollment in the Earth System Science Honors Program. This course is also open to Earth System Science majors participating in the Campuswide Honors Program. Earth System Science H198 and 198 may not both be taken for credit.

199 Undergraduate Research (2 to 4) F, W, S. For junior and senior undergraduates, preferably with majors in science or engineering. Interested students should arrange with a member of the Earth System Science faculty to supervise and support a research project. A written summary is required at the end of each quarter. Prerequisite: consent of instructor.

H199A-B-C Honors Research in Earth System Science (4-4-4) F, W, S. Undergraduate honors research in Earth System Science. A student commitment of 10–15 hours a week is expected, and a written report is required at the end of the quarter. Prerequisites: consent of faculty sponsor; acceptance and enrollment in the Earth System Science Honors Program. The sequence is also open to Earth and Environmental Sciences majors participating in the Campuswide Honors Program.

GRADUATE

201 Paleoclimate (2) S. Explores past changes in the Earth system: atmospheric composition, ocean circulation, climate and weather, and the biosphere. Paleo-record lessons from past climate change. Formerly Earth System Science 212A.

203 Earth System Change (2) S. Explores present and projected changes in the Earth system: atmospheric composition, ocean circulation, climate and weather, and the biosphere. Currently observed global warming, related changes, projections of our future. Formerly Earth System Science 212B.

211 Geoscience Data Analysis (2) F. Teaches fundamental statistical techniques needed to analyze Earth system data and models. Includes hands-on experience with computers. Formerly Earth System Science 210A.

213 Geoscience Modeling (2) W. Teaches basic numerical calculation techniques to solve Earth system models, computational approaches, accuracy. Includes hands-on experience with computers. Focuses on linear and non-linear ordinary differential equations. Formerly Earth System Science 210B.

215 Cryosphere (2) W. A global perspective of the major components of the cryosphere. Includes current extent and trends, mass balance, energetics, and physical processes. Quantitative assessment of current state, *in situ* and remote observations, and interactions with climate. Formerly Earth System Science 204B.

220 Earth System Climatology (2) F. Includes evolution of Earth, atmosphere/ocean circulation, and land and ocean geography. Prerequisites: Mathematics 2D; Physics 3C or 7E or equivalent, or consent of instructor. Formerly Earth System Science 200A.

223 Earth System Physics (2) F. Physical processes which mediate the transformation of energy and momentum in the climate system. Topics include hydrostatics, radiation, and climate forcing and feedbacks. Formerly Earth System Science 200B.

227 Geophysical Fluid Dynamics I (2) W. Introduction to the fluid dynamics of the atmosphere and ocean. Equations of motion for a rotating stratified fluid, hydrostatic, and geostrophic balance with applications to the mean circulation and variability of the atmosphere and ocean. Formerly Earth System Science 206A.

229 Geophysical Fluid Dynamics II (2) W. Introduction to the fluid dynamics of the atmosphere and ocean with applications of scaling analysis, potential vorticity dynamics, linear waves, energetics and instability theory to the circulation of the atmosphere and ocean. Formerly Earth System Science 206B.

231 Global Hydrology (2) W. Global hydrologic cycle and its interactions within the Earth's climate system. Precipitation, clouds and radiation, water vapor, sea surface fluxes, terrestrial hydrology. Formerly Earth System Science 204A.

232 Terrestrial Hydrology (4) S. Comprehensive treatment of modern conceptual and methodological approaches to hydrological science. Combines qualitative understanding of hydrological processes with quantitative representation, approaches to measurement, and treatment of uncertainty. Major components of the hydrological cycle and their linkages within the coupled Earth system. Prerequisite: Earth System Science 60A or 51 or consent of instructor. Concurrent with Earth System Science 132.

236 Radiative Processes and Remote Sensing (4) F. Solar and terrestrial radiation and Earth system interaction. Radiative transfer theory. Principles, applications of remote sensing of environment. Planck's law, radiative transfer equation, radiative properties of trace gasses and aerosols, remote sensing techniques, global trends in radiative forcing. Prerequisites: Mathematics 2D and Physics 7A-B-D, or equivalent.

238 Analysis of Hydrologic Systems (3) F. Application of systems theory in hydrologic, land surface, and biogeochemical modeling. Design, identification, and calibration of conceptual models. Principles of dynamic systems and modeling approaches, theory of linear systems and mathematical concepts of differential calculus, theoretical concepts of parameter estimation and optimization theory. Same as Civil and Environmental Engineering CEE289.

241 Atmospheric Chemistry (2) W. Chemistry of the atmosphere. Topics include: tropospheric photochemistry; the tropospheric ozone budget; stratospheric chemistry and the ozone hole. Formerly Earth System Science 208A. Earth System Science 241 and 242 may not both be taken for credit.

250 Laboratory Methods in Earth System Science (4) W. Introduction to analytical methods used in Earth science research. Lectures cover theory and applications of each method. Laboratories cover sample preparation, experimental design, standardization and calibration, operation of analytical instruments (mass spectrometers, gas chromatographs, and spectrophotometers), and analysis of data. Concurrent with Earth System Science 150.

260 Global Biological Change (4) F. Lecture, two hours; field work, one hour. An investigation of the mechanisms that underlie responses of organisms to human-caused environmental changes. Activities include field trips, literature discussions, and lectures. Focuses on issues of interest in Southern California, including nitrogen deposition, invasions, and habitat fragmentation. Same as Ecology and Evolutionary Biology 225.

261 Global Biogeochemistry I (2) F. Biogeochemical processes which mediate the transformation of carbon, nitrogen, and other biogeochemically important elements on land. Topics include chemistry of soils, nutrient limitation, cycling of dissolved and particulate organic matter, and isotopes. Formerly Earth System Science 202A.

262 Global Biogeochemical Cycles (2) W. Global biogeochemical cycling of the elements. Topics include: global cycling of carbon, nitrogen, oxygen, and sulfur; impact of human activities on biogeochemical processes. Formerly Earth System Science 208B. Earth System Science 262 and 242 may not both be taken for credit.

263 Terrestrial Ecology (2) S. A mechanistic perspective of the structure and functioning of terrestrial ecosystems. Includes the processes that control plant growth and community structure, nutrient cycling, and role of ecosystem dynamics in local and global biogeochemical cycling. Same as Ecology and Evolutionary Biology 263. Formerly Earth System Science 218A.

264 Ecosystems Ecology (4) F, W, S. A mechanistic perspective on ecosystem processes. Covers ecosystem development, element cycling, and interactions with plants and microbes. The role of ecosystems in environmental change is also addressed. Prerequisite: Chemistry 51C. Concurrent with Earth System Science 164 and Biological Sciences E118.

265 Ocean Ecology (2) S. A mechanistic perspective of the structure and functioning of marine ecosystems. Includes the processes that control plant growth and community structure, nutrient cycling, and role of ecosystem dynamics in local global biogeochemical cycling. Formerly Earth System Science 218B.

268 Physiological Plant Ecology (4) F. An examination of the interactions between plants and their environment. Emphasis on the underlying physiological mechanisms of plant function, adaptations and responses to stress, and the basis of the distribution of plants and plant assemblages across the landscape. Prerequisites: Earth System Science 51 or 60A and 60C or Biological Sciences E106. Concurrent with Earth System Science 168 and Biological Sciences E127.

270 Environmental Microbiology (4) F. Establishes a fundamental understanding of microbes living in the environment, including their distribution, diversity, and biochemistry, and discusses how they attribute to global biogeochemical cycles. Prerequisites: Earth System Science 53 or 60A and 60C or Biological Sciences E106. Concurrent with Earth System Science 170 and Biological Sciences E163.

280A-B-C Special Topics in Earth System Science (1 to 4). Each quarter is devoted to current topics in the field of Earth System Science. Prerequisite: Earth System Science 200 or equivalent, or consent of instructor. May be repeated for credit as topics vary. Formerly Earth System Science 280.

282A-B Special Topics in Climate (1 to 4). Each quarter is devoted to in-depth analysis of an important and rapidly developing area in the field of climate dynamics. Prerequisite: Earth System Science 200 or equivalent, or consent of instructor. May be repeated for credit as topics vary.

284A-B-C Special Topics in Atmospheric Chemistry (1 to 4) F, W, S. Each quarter is devoted to current topics in the field of Atmospheric Chemistry. Prerequisite: Earth System Science 200 or equivalent, or consent of instructor. May be repeated for credit as topics vary.

286A-B Special Topics in Biogeochemistry (1 to 4). Each quarter is devoted to in-depth analysis of a subarea in biogeochemistry which is undergoing rapid development. Prerequisite: Earth System Science 200 or equivalent, or consent of instructor. May be repeated for credit as topics vary.

288A-B-C Special Topics in Ecosystems (1 to 4) F, W, S. Each quarter is devoted to current topics relating to Ecosystems. May be repeated for credit as topics vary. Prerequisite: Earth System Science 200 or equivalent, or consent of instructor.

290 Seminar (1) F, W, S. Weekly seminars and discussions on topics of general and current interest in Earth System Science. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing. May be repeated for credit as topics vary.

298A-B-C Practicum in Earth System Science (2-2-2) F, W, S. For first-year graduate students. Students explore research opportunities and develop a proposal for a summer research project under the direction of a faculty member.

299 Research (2 to 12) F, W, S. Supervised original research in areas of Earth System Science. Prerequisite: consent of instructor. May be repeated for credit.

399 University Teaching (1 to 4) F, W, S. Required of and limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

DEPARTMENT OF MATHEMATICS

340 Rowland Hall; (949) 824-5503
Chuu-Lian Terng, **Department Chair**

Faculty

Takeo Akasaki, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (ring theory)

Vladimir Baranovsky, Ph.D. University of Chicago, *Assistant Professor of Mathematics* (algebraic geometry, representation theory)

Frank B. Cannonito, Ph.D. Adelphi University, *Professor Emeritus of Mathematics* (group theory)

Long Chen, Ph.D. Pennsylvania State University, *Assistant Professor of Mathematics* (numerical analysis, scientific computing, finite element methods)

Larry Chrystal, M.A. University of California, Santa Barbara, *Lecturer in Mathematics*

Michael C. Cranston, Ph.D. University of Minnesota, *Professor of Mathematics* (probability)

Donald Darling, Ph.D. California Institute of Technology, *Professor Emeritus of Mathematics*

Sarah Eichhorn, Ph.D. University of Arizona, Tucson, *Lecturer with Potential Security of Employment, Department of Mathematics* (applied mathematics, mathematics education)

Paul C. Eklof, Ph.D. Cornell University, *Professor Emeritus of Mathematics* (logic and algebra)

Germán A. Enciso Ruiz, Ph.D. Rutgers University, *Assistant Professor of Mathematics* (dynamical systems, mathematical and systems biology)

Catherine Famiglietti, Ph.D. Princeton University, *Lecturer in Mathematics* (calculus, numerical methods)

Aleksandr Figotin, Ph.D. Tashkent University, *Professor of Mathematics* (applied mathematics, electromagnetic waves in inhomogeneous media, photonic crystals)

Mark Finkelstein, Ph.D. Stanford University, *Professor Emeritus of Mathematics* (analysis)

Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and of Logic and Philosophy of Science* (logic)

Michael D. Fried, Ph.D. University of Michigan, *Professor Emeritus of Mathematics* (arithmetic geometry, complex variables)

Anton Gorodetski, Ph.D. Moscow State University, *Assistant Professor of Mathematics* (dynamical systems)

Patrick Guidotti, Ph.D. University of Zürich, *Associate Professor of Mathematics* (partial differential equations, applied mathematics)

Svetlana Jitomirskaya, Ph.D. Moscow State University, *Department Vice Chair for Graduate Studies and Professor of Mathematics* (mathematical physics, dynamical systems)

Abel Klein, Ph.D. Massachusetts Institute of Technology, *Professor of Mathematics* (mathematical physics, random Schrödinger operators)

Natalia L. Komarova, Ph.D. University of Arizona, *Professor of Mathematics and of Ecology and Evolutionary Biology* (applied mathematics, mathematical biology))

Rachel Lehman, Ph.D. University of California, Irvine, *Lecturer in Mathematics*

Peter Li, Ph.D. University of California, Berkeley, *UCI Chancellor's Professor of Mathematics* (differential geometry)

Song-Ying Li, Ph.D. University of Pittsburgh, *Professor of Mathematics* (several complex variables, nonlinear partial differential equations, harmonic analysis)

John S. Lowengrub, Ph.D. New York University, *UCI Chancellor's Professor of Mathematics, Biomedical Engineering, and Chemical Engineering and Materials Science* (mathematical materials science, mathematical fluid dynamics, mathematical biology, computational mathematics, cancer modeling, nanomaterials, quantum dots, complex fluids)

Zhiqin Lu, Ph.D. New York University, *Department Vice Chair for Undergraduate Studies and Professor of Mathematics* (differential geometry)

Penelope Maddy, Ph.D. Princeton University, *UCI Distinguished Professor of Logic and Philosophy of Science and of Mathematics* (logic, philosophy, and foundations of mathematics)

Caryl Margulies, Ph.D. University of California, Irvine, *Lecturer in Mathematics* (cryptography, graph theory, partial differential equations, linear algebra)

Eric D. Mjolsness, Ph.D. California Institute of Technology, *Professor of Computer Science and Mathematics* (applied mathematics, mathematical biology, modeling languages)

Qing Nie, Ph.D. Ohio State University, *Professor of Mathematics and Biomedical Engineering* (computational mathematics, systems biology, cell signaling and stem cell)

Timur Oikhberg, Ph.D. Texas A&M University, *Associate Professor of Mathematics* (functional analysis)

Richard S. Palais, Ph.D. Harvard University, *Adjunct Professor of Mathematics* (differential geometry, mathematical visualization)

David L. Rector, Ph.D. Massachusetts Institute of Technology, *Professor Emeritus of Mathematics* (algebraic topology, computer algebra)

Robert C. Reilly, Ph.D. University of California, Berkeley, *Associate Professor of Mathematics* (differential geometry)

Karl C. Rubin, Ph.D. Harvard University, *Professor of Mathematics, and Edward and Vivian Thorp Chair in Mathematics* (number theory)

Bernard Russo, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (functional analysis)

Donald G. Saari, Ph.D. Purdue University, *Director of the Institute for Mathematical Behavioral Sciences and UCI Distinguished Professor of Economics and Mathematics* (dynamical systems with an emphasis on the Newtonian N-body problem and issues coming from the mathematical social and behavioral sciences)

Martin Schechter, Ph.D. New York University, *Professor of Mathematics* (partial differential equations, functional analysis, critical point theory)

Stephen Scheinberg, Ph.D. Princeton University; M.D. University of California, Irvine, *Professor Emeritus of Mathematics* (analysis)

Alice Silverberg, Ph.D. Princeton University, *Professor of Mathematics and Computer Science* (number theory and arithmetic algebraic geometry)

William H. Smoke, Ph.D. University of California, Berkeley, *Professor Emeritus of Mathematics* (homological algebra)

Knut Solna, Ph.D. Stanford University, *Professor of Mathematics* (applied mathematics)

Ronald J. Stern, Ph.D University of California, Los Angeles, *Professor of Mathematics* (geometry and topology)

Chuu-Lian Terng, Ph.D. Brandeis University, *Department Chair and Professor of Mathematics* (differential geometry)

Edriss S. Titi, Ph.D. Indiana University, *Professor of Mathematics and of Mechanical and Aerospace Engineering* (applied and computational mathematics, nonlinear partial differential equations)

Howard G. Tucker, Ph.D. University of California, Berkeley, *Professor Emeritus of Mathematics* (probability and statistics)

Daqing Wan, Ph.D. University of Washington, *Professor of Mathematics* (number theory, its algorithms and applications)

Frederic Yui-Ming Wan, Ph.D. Massachusetts Institute of Technology, *Professor of Mathematics and of Mechanical and Aerospace Engineering* (applied mathematics)

Robert W. West, Ph.D. University of Michigan, *Professor Emeritus of Mathematics* (algebraic topology)

Joel J. Westman, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (analysis)

Robert J. Whitley, Ph.D. New Mexico State University, *Professor Emeritus of Mathematics* (analysis)

Janet L. Williams, Ph.D. Brandeis University, *Professor Emerita of Mathematics* (probability and statistics)

Dominik Wodarz, Ph.D. University of Oxford, *Professor of Ecology and Evolutionary Biology and of Mathematics* (mathematical biology)

Jack Xin, Ph.D. New York University, *Professor of Mathematics* (applied mathematics)

James J. Yeh, Ph.D. University of Minnesota, *Professor Emeritus of Mathematics* (real and stochastic analysis)

Yifeng Yu, Ph.D. University of California, Berkeley, *Assistant Professor of Mathematics* (nonlinear partial differential equations)

Martin Zeman, Ph.D. Humboldt University, *Associate Professor of Mathematics* (logic and combinatorics)

Hong-Kai Zhao, Ph.D. University of California, Los Angeles, *Professor of Mathematics and Computer Science* (computational and applied mathematics)

Weian Zheng, Ph.D. Université de Strasbourg, *Professor of Mathematics* (probability theory and financial engineering)

The Department of Mathematics is engaged in teaching and in fundamental research in a wide variety of basic mathematical disciplines, and offers undergraduate and graduate students the opportunity to fashion a thorough program of study leading to professional competence in mathematical research or in an area of application.

The curriculum in mathematics includes opportunities for supervised individual study and research and is augmented by seminars and colloquia. It is designed to be compatible with curricular structures at other collegiate institutions in California in order to enable students transferring to UCI to continue their programs of mathematics study.

Undergraduate Program

The Department offers a B.S. degree in Mathematics. Within this program there are six tracks; besides the standard track, there are five specializations or concentrations (in Mathematics for Economics, Applied and Computational Mathematics, Statistics, Mathematics for Education, and Mathematics for Education/Secondary Teaching Certification). In addition, the Department offers a minor in Mathematics.

Undergraduate mathematics courses are of several kinds: courses preparatory to advanced work in mathematics, the exact sciences, and engineering; courses for students of the social and biological sciences; and courses for liberal arts students and those planning to enter the teaching field.

Admission to the Major

Students may be admitted to the Mathematics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office and at http://www.changeofmajor.uci.edu. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall and who have satisfactorily completed the required course work of one year of approved calculus.

REQUIREMENTS FOR THE B.S. DEGREE IN MATHEMATICS

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements

Lower-Division Requirements (for all Mathematics majors except those in the specialization in Mathematics for Education and the concentration in Mathematics for Education/Secondary Teaching Certification):

A. Mathematics 2A-B, 2D (or H2D), 2E (or H2E), 2J, 3A, 3D, 13.

B. Computing skills attained through either Information and Computer Science 21, Engineering E10, Engineering EECS10, Engineering EECS12, Engineering MAE10, or Physics 53.

C. One three-quarter lecture course sequence selected from Chemistry 1A-B-C, Physics 7A-B-D, 7A-B-E, or 7B-D-E (or Physics 2 and 7C-D, Physics 2 and 7C-E, or Physics 7C-D-E).

Upper-Division Requirements (for Mathematics majors except those in the Economics concentration, Applied and Computational specialization, Education specialization, or Education concentration): Most of the upper-division Mathematics courses are organized into a series of Core Areas. The Core Areas are Numerical Analysis (courses numbered 100–109); Applied Mathematics (110–119); Algebra (120–129); Probability and Statistics (130–139); Analysis (140–149); Logic (150–159); and Geometry/Topology (160–169). There are also non-Core-Area courses (170–189). Students are required to complete 15 upper-division one-quarter lecture courses in Mathematics (with associated laboratories when applicable) as follows. (Mathematics Honors Program students follow modified requirements, as explained in a later section.)

A. Mathematics 120A, 121A

B. Mathematics 140A-B

C. A third lecture course from the Algebra Core Area (120–129)

D. A third lecture course from the Analysis Core Area (140–149)

E. One additional lecture course from either the Algebra or the Analysis Core Area

F. Two lecture courses from a third Core Area

G. One lecture course from a fourth Core Area

H. Five additional lecture courses in Mathematics chosen from the Core Areas or from courses numbered 170–189

The Department offers two concentrations and three specializations. Note that all require the completion of an application and an interview with an advisor.

Concentration in Mathematics for Economics

Admission to this concentration requires approval in advance by the Mathematics Department. The admissions process begins with completing a form at the Department office and includes an interview with the Department's advisor for the concentration. This approval should be applied for after the student has completed Economics 20A-B, but no later than the end of the junior year.

Upper-division requirements:

A. Twelve upper-division Mathematics lecture courses (plus any associated laboratories) including:

1. Nine courses: Mathematics 120A, 121A-B, 140A-B-C, 131A-B-C (same as Statistics 120A-B-C).
2. Three elective lecture courses chosen from Mathematics 105A-B (plus 105LA-LB), 107 (plus 107L), 112A-B-C, 118A-B-C, 130B-C, 133A-B, 176.

B. Eight Economics courses: Economics 20A-B, 105A-B-C, 123A-B-C.

Specialization in Applied and Computational Mathematics

Admission to this specialization requires approval in advance by the Mathematics Department. The admissions process begins with completing a form at the Department office, and includes an interview with the Department's advisor for the specialization. This approval should be applied for no later than the end of the junior year.

Upper-division requirements:

A. Thirteen upper-division Mathematics lecture courses (plus any associated laboratories) including:

1. Ten required lecture courses: Mathematics 105A-B, 107 (plus 105LA-LB, 107L), 112A-B-C, 115, 121A, 140A-B.
2. A two-quarter sequence chosen from Mathematics 114A and 147, 118A-B, 120A-B, 130B-C, 131A-B, 140C-D, 162A-B.
3. One additional Mathematics course numbered 100–189.

B. Two approved upper-division courses in an area of application outside of Mathematics. Approval must be obtained in advance from the advisor for this specialization. The student is responsible for satisfying any prerequisites for these courses.

Specialization in Statistics

Admission to this specialization requires approval in advance by the Mathematics Department. The admissions process begins with

completing a form at the Department office, and includes an interview with the Department's advisor for the specialization.

All the requirements for the Mathematics major must be satisfied; in fulfilling requirements F and H, students must include the following courses: Mathematics 131A-B-C (or Statistics 120A-B-C), either 130B-C, 132B-C, or 133A-B, and two additional courses approved in advance by the advisor for this specialization.

Specialization in Mathematics for Education

Admission to this specialization requires approval in advance by the Mathematics Department. The admission process begins with completing a form at the Department office, and includes an interview with the Department's advisor for the specialization. This approval should be applied for no later than the end of the junior year.

This specialization helps to prepare students for teaching mathematics. Students wishing to go on and teach at the intermediate and high school levels should also consult with an academic advisor in the Department of Education. A Commission on Teacher Credentialing (CTC)-approved subject-matter program (SMP) in Mathematics can be easily satisfied in tandem with this specialization, and enables students to waive a subject matter exam for teachers. Specific SMP requirements and enrollment procedures are available from the Department of Education. Students interested in teaching at the high school level are encouraged to complete the course *Physical Sciences 106* in addition to the requirements listed below.

Lower-Division Requirements:

A. Mathematics 2A-B, 2D (or H2D), 2J, 3A, 3D, 8, and 13.

B. Computing skills attained through either Information and Computer Science 21, Engineering E10, Engineering EECS10, Engineering EECS12, Engineering MAE10, or Physics 53.

C. One three-quarter lecture course sequence selected from Chemistry 1A-B-C, Physics 7A-B-D, 7A-B-E, or 7B-D-E (or Physics 2 and 7C-D, Physics 2 and 7C-E, or Physics 7C-D-E).

Upper-Division Requirements:

A. Mathematics 105A, 105LA, 120A-B, 131A-B (or Statistics 120A-B), 140A-B, 150, 161, 180A, 184; plus one additional Mathematics course numbered 100–189.

B. Education 172B; Physical Sciences 5 and 105.

Concentration in Mathematics for Education/Secondary Teaching Certification

Admission to this concentration requires approval in advance by the Mathematics Department. The admission process begins with completing a form at the Department office and includes an interview with the Department's advisor for the concentration. This approval should be applied for no later than the end of the sophomore year.

This concentration allows students pursuing the B.S. in Mathematics to earn a bachelor's degree and complete the required course work and field experience for a California Preliminary Single Subject Teaching Credential at the same time. With careful, early planning, it is possible for students to complete both in four years. For additional information about teacher certification requirements and enrollment procedures, see page 384 or contact the Physical Sciences Student Affairs Office or the Cal Teach Resource and Advising Center. A Commission on Teacher Credentialing (CTC)-approved subject-matter program (SMP) in Mathematics can be satisfied in tandem with this concentration, and enables students to waive a subject matter exam for teachers. Specific SMP requirements and enrollment procedures are available from the Cal Teach Resource and Advising Center or the Department of Education.

Students interested in teaching at the high school level are encouraged to complete the course *Physical Sciences 106* in addition to the requirements listed below.

Lower-Division Requirements:

A. Mathematics 2A-B, 2D (or H2D), 2J, 3A, 3D, 8, and 13.

B. Computing skills attained through either Information and Computer Science 21, Engineering E10, Engineering EECS10, Engineering EECS12, Engineering MAE10, or Physics 53.

C. One three-quarter lecture course sequence selected from Chemistry 1A-B-C, Physics 7A-B-D, 7A-B-E, or 7B-D-E (or Physics 2 and 7C-D, Physics 2 and 7C-E, or Physics 7C-D-E).

Upper-Division Requirements:

A. Mathematics 105A, 105LA, 120A-B, 131A-B (or Statistics 120A-B), 140A-B, 150, 161, 180A, 184; plus one additional Mathematics course numbered 100–189.

B. Physical Sciences 5, 105; Chemistry or Physics 193; Logic and Philosophy of Science 60; Education 55, 109, 143A, 143B, 148, and two quarters of 158.

NOTE: Students may pursue either the concentration in Mathematics for Education/Secondary Teaching Certification or the specialization in Mathematics for Education, but not both.

HONORS PROGRAM IN MATHEMATICS

The Honors Program in Mathematics is open to all junior and senior Mathematics majors who meet the minimum academic qualifications of a 3.5 GPA in Mathematics courses and a 3.2 GPA overall. Students should apply for the Honors Program no later than the fall quarter of their senior year.

Participation in this program is highly recommended for students contemplating graduate work in Mathematics.

In addition to completing the requirements for the major in Mathematics (in any one of its tracks), participants must meet the following requirements:

A. At least 15 units of Analysis: satisfied *either* by Mathematics 140A-B-C and 140D or 147; *or* by 205A-B-C. (Mathematics 205A-B-C may be taken after undergraduate analysis courses or in place of them: in terms of satisfaction of requirements for the major, 205A-B-C counts as the equivalent of four upper-division analysis courses. Students who have taken the undergraduate analysis sequence should discuss with the Honors Advisor the possibility of taking Mathematics 210A-B-C instead of 205A-B-C.)

B. At least 15 units of Algebra: satisfied *either* by Mathematics 120A-B and 121A-B; *or* by 206A-B-C. (Mathematics 206A-B-C may be taken after undergraduate algebra courses or in place of them; in terms of satisfaction of requirements for the major, 206A-B-C counts as the equivalent of four upper-division algebra courses. Students who have taken the undergraduate algebra sequence should discuss with the Honors Advisor the possibility of taking Mathematics 230A-B-C instead of 206A-B-C.)

C. Completion of the Honors Seminar, H195A-B. (Mathematics H195B may be counted toward the major requirements as one of the five additional courses in area H.)

D. *Either* the completion of an honors thesis *or* completion of one of the graduate sequences, Mathematics 205A-B-C or 206A-B-C. Students pursuing a thesis may work with a faculty advisor of the choice, approved by the Honors Advisor.

Any exception to these requirements must be approved *in advance* by the Honors Advisor.

If all requirements are completed and the student's work and final GPA is deemed of honors' quality by the Department's Honors

Committee, the student graduates with Honors in Mathematics, and this distinction is noted on their transcript.

Requirements for the Minor

One course selected from Mathematics 13, 120A, or 140A, plus six additional upper-division lecture courses in Mathematics (plus the associated laboratories, where applicable) numbered 100–188. NOTE: Nearly all upper-division courses in Mathematics have Mathematics 2A-B-J as prerequisites, and many courses have additional prerequisites such as Mathematics 2D, 2E, 3A, and/or 3D.

PLANNING A PROGRAM OF STUDY

The application process for the specializations and concentrations is designed to make sure the student gets suitable advising in planning a program of study. For all Mathematics majors, or prospective majors, assistance in planning a program of study is available from the Mathematics Department Undergraduate Advisor and the advisors for the various tracks, as well as from the academic counselors for the School of Physical Sciences. The following sample programs are only examples.

Majors should consider taking Mathematics H2D in place of 2D and H2E in place of 2E. Those in the specialization for Education should note that Mathematics 120C, 161, 180A, and 184 may not be offered more than once every other year and thus should be taken when offered.

Sample Program — Mathematics Major Interested in Pure Mathematics or Preparing for Graduate Study in Mathematics

FALL	WINTER	SPRING
Freshman		
Math. 2B	Math. H2D	Math. H2E
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Sophomore		
Math. 2J	Math. 3A	Math. 3D
Math. 13	ICS 21	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Junior		
Math. 120A	Math. 120B	Math. 121B
Math. 140A	Math. 121A	Math. 140C
Gen. Ed./Elective	Math. 140B	Math. 141
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Senior		
Math. 150	Math. 151	Math. 152
Math. 205A (or 206A)	Math. 162B	Gen. Ed./Elective
Math. 162A	Math. 205B (or 206B)	Math. 205C (or 206C)
Gen. Ed./Elective	Math. 147	Gen. Ed./Elective

Sample Program — Mathematics Major Concentrating in Mathematics for Economics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Sophomore		
Math. 2E	Math. 3A	Math. 3D
Math. 2J	ICS 21	Math. 13
Economics 20A	Economics 20B	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	
Junior		
Math. 131A	Math. 131B	Math. 131C
Math. 140A	Math. 140B	Math. 140C
Economics 105A	Economics 105B	Economics 105C
Gen. Ed./Elective	Math. 176	Gen. Ed./Elective
Senior		
Math. 120A	Math. 121A	Math. 121B
Math. 105A, LA	Math. 105B, LB	Gen. Ed./Elective
Economics 123A	Economics 123B	Economics 123C
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective

Sample Program — Mathematics Major Specializing in Applied and Computational Mathematics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Sophomore		
Math. 2J	Math. 2E	Math. 3D
ICS 21	Math. 3A	Math. 13
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Junior		
Math. 112A	Math. 112B	Math. 112C
Math. 140A	Math. 140B	Math. 115
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Senior		
Math. 105A, LA	Math. 105B, LB	Math. 107, 107L
Math. 114A	Math. 147	Math. 121A
Technical Elective	Technical Elective	Math. 146
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective

Sample Program — Mathematics Major Specializing in Statistics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 7A, 7LA	Physics 7B, 7LB	Physics 7D, 7LD
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Sophomore		
Math. 2E	Math. 3A	Math. 3D
Math. 2J	ICS 21	Math. 13
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Junior		
Math. 120A	Math. 121A	Math. 121B
Math. 131A	Math. 131B	Math. 131C
Math. 140A	Math. 140B	Math. 140C
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Senior		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 130C
Gen. Ed./Elective	Math. 130B	Math. 146
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective

Sample Program — Mathematics Major Specializing in Mathematics for Education

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 2	Physics 7C, 7LC	Physics 7D, 7LD
Physical Sciences 5	Gen. Ed.	Math. 8
Gen. Ed.		
Sophomore		
Math. 2J	Math. 3A	Math. 3D
Math. 13	Gen. Ed.	Comp. Prog. Course
Physical Sciences 105	Gen. Ed.	Gen. Ed.
Gen. Ed.		
Junior		
Math. 131A/Stats. 120A	Math. 120A	Math. 120B
Math. 140A	Math. 131B/Stats. 120B	Math. 161
Gen. Ed.	Math. 140B	Math. 184
Senior		
Math. 105A, 105LA	Math. 180A	Math. Elective
Math. 150	Education 172B	Gen. Ed.
Gen. Ed./Elective	Gen. Ed.	Gen. Ed.

Sample Program – Concentration in Mathematics for Education/Secondary Teaching Certification

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
Physics 2	Physics 7C, 7LC	Physics 7D, 7LD
Physical Sciences 5	Gen. Ed.	Math. 8
Gen. Ed.		
Sophomore		
Math. 2J	Math. 3A	Math. 3D
Math. 13	Math. 180A	Comp. Prog. Course
Physical Sciences 105	Chem. 193	Log. & Philo. Sci. 60
Gen. Ed.	Gen. Ed	
Junior		
Math. 131A/Stats. 120A	Math. 120A	Math. 120B
Math. 140A	Math. 131B/Stats. 120B	Math. 161
Education 55	Math. 140B	Math. 184
	Education 143A	Education 143B
Senior		
Math. 105A, 105LA	Education 109	Math. Elective
Math. 150	Education 158	Education 158
Education 148	Gen. Ed.	Gen. Ed.

Graduate Program

Graduate courses are designed to meet the needs of students doing graduate work in mathematics and in those disciplines that require graduate-level mathematics for their study. Among the fields covered are analysis, algebra, applied and computational mathematics, mathematical biology, functional analysis, geometry and topology, probability, ordinary and partial differential equations, and mathematical logic.

In addition to formal courses, there are seminars for advanced study toward the Ph.D. in various fields of mathematics. Topics will vary from year to year. Each seminar is conducted by a faculty member specializing in the subject studied. Enrollment will be subject to the approval of the instructor in charge.

MASTER OF SCIENCE IN MATHEMATICS

The Master's program serves a dual purpose. For some students it will be a terminal program of mathematics education; for others it will lead to study and research at the doctoral level. To earn the Master of Science degree, the student must satisfy course and residency requirements, and pass Comprehensive Examinations administered by the Graduate Studies Committee of the Department.

The M.S. degree requires the satisfactory completion of a total of 12 courses. Students are required to complete at least one series of the following courses: Mathematics 210A-B-C, 220A-B-C, or 230A-B-C. At most one undergraduate course may count as an elective course, provided it is sponsored by rank faculty and approved by the Graduate Advisor. At most one elective course (of at least three units) is allowed outside the Department.

Students will take Advisory Examinations in Algebra and Analysis upon entrance to the graduate program. The Advisory Examination in Algebra is based on the courses Mathematics 120A and 121A-B plus some advanced topics in group theory and linear algebra; students who do not pass this examination will be asked to take the Mathematics 206A-B-C sequence. The Advisory Examination in Analysis is based on the courses Mathematics 140A-B-C-D; students who do not pass this examination will be asked to take the Mathematics 205A-B-C sequence.

Students must pass two Comprehensive Examinations, one in Algebra and one in Analysis, before the beginning of their second year in the graduate program and will be given, at most, two chances to pass each examination. Students who have passed the Advisory Examination will be exempted from taking the corresponding Comprehensive Examination.

Students who fail to pass the required examinations satisfactorily within the period specified will be recommended for academic disqualification by the Graduate Dean.

Mathematics 199, 297, 298, 299, and 399 may not be used to fulfill course requirements.

The residency requirement ordinarily is satisfied by full-time enrollment for three quarters immediately preceding the award of the M.S. degree. When appropriate, a leave of absence may be granted between matriculation and the final quarters of study.

MASTER OF SCIENCE IN MATHEMATICS WITH A TEACHING CREDENTIAL

In cooperation with the UCI Department of Education, the Department of Mathematics sponsors a coordinated program for the M.S. degree in Mathematics and the California Single Subject Teaching Credential. This option requires 12 courses, at least eight of which must be graduate courses. Three thesis courses (Mathematics 299) *may* be used as part of the course work for this option. The Advisory and Comprehensive Examination requirements are the same as for the regular Master's degree. Prospective graduate students interested in this program should so indicate on their applications and can request a detailed description of the program from the Department of Mathematics or the Department of Education.

Advancement to Candidacy

All Master's students, prior to the beginning of their final quarter of enrollment, must be advanced to candidacy for the degree. An application for Advancement to Candidacy must be completed by the student and submitted for approval by the Department. The approved application must be submitted to the Office of Graduate Studies at least 30 days before the beginning of the quarter in which the degree is expected. If the candidate is not advanced before the beginning of the quarter in which all requirements are completed, the degree will not be conferred until the end of the following quarter. Deadlines for submission of the Application for Advancement to Candidacy are published on the Graduate Divisions Web site, along with filing fee information and deadlines.

DOCTOR OF PHILOSOPHY IN MATHEMATICS

When accepted into the doctoral program, the student embarks on a program of formal courses, seminars, and individual study courses to prepare for the Ph.D. Qualifying Examinations, Advancement to Candidacy Examination, and dissertation.

All students will take Advisory Examinations in Algebra and Analysis upon entrance to the graduate program. The Advisory Examination in Algebra is based on the courses Mathematics 120A and 121A-B, plus some advanced topics in group theory and linear algebra; students who do not pass this examination will be asked to take the Mathematics 206A-B-C sequence. The Advisory Examination in Analysis is based on material covered in Mathematics 140A-B-C-D; students who do not pass this examination will be asked to take the Mathematics 205A-B-C sequence. All students who take Mathematics 205A-B-C (Analysis) and 206A-B-C (Algebra) must pass the corresponding Comprehensive Examination, which covers the material of the Advisory Examination plus Mathematics 205 or 206, respectively. The Comprehensive Examination will be given in spring and fall each year. If the exam is not passed in spring, it will be taken in fall and must be passed by the beginning of the second year in the graduate program.

Each student must choose at least two series of the following three series of courses—Mathematics 210A-B-C (Real Analysis), 220A-B-C (Complex Analysis), or 230A-B-C (Algebra)—and pass two written Qualifying Examinations from these courses before the end of their third year. Each examination may be taken twice. A student who passes the examination prior to taking the corresponding course will be exempted from taking the course. The Department will offer the Qualifying Examinations twice each year, during orientation week before the fall quarter and at the end of spring quarter.

By the end of their second year, students must declare a major specialization from the following areas: Algebra, Analysis, Applied and Computational Mathematics, Geometry and Topology, Logic, or Probability. Students are required to take two series of courses from their chosen area. (Students who later decide to change their area must also take two series of courses from the new area.) Additionally, all students must take two series of course outside their declared major area of specialization. Special topics courses within certain areas of specialization and courses counted toward the M.S. degree, other than Mathematics 205A-B-C and 206A-B-C, will count toward the fulfillment of the major specialization requirement.

By the beginning of their third year, students must have an advisor specializing in their major area. With the advisor's aid, the student forms a committee for the Advancement to Candidacy oral examination. This committee will be approved by the Department on behalf of the Dean of the Graduate Division and the Graduate Council and will have five faculty members. At least one, and at most two, of the members must be faculty from outside the Department. Before the end of the third year, students must have a written proposal, approved by their committee, for the Advancement to Candidacy examination. The proposal should explain the role of at least two series of courses from the student's major area of specialization that will be used to satisfy the Advancement to Candidacy requirements. The proposal should also explain the role of additional research reading material as well as providing a plan for investigating specific topics under the direction of the student's advisor(s). The courses Mathematics 210A-B-C, 220A-B-C, and 230A-B-C cannot count for both Qualifying Examinations and the course requirements for Advancement to Candidacy Examinations. After the student meets the requirements, the Graduate Studies Committee recommends to the Dean of the Graduate Division the advancement to candidacy for the Ph.D. degree. Students should advance to candidacy by the beginning of their fourth year.

After advancing to candidacy, students are expected to be fully involved in research toward writing their Ph.D. dissertation. Ideally, students should keep in steady contact/interaction with their Doctoral committee.

Teaching experience and training is an integral part of the Ph.D. program. All doctoral students are expected to participate in the Department's teaching program.

The candidate must demonstrate independent, creative research in Mathematics by writing and defending a dissertation that makes a new and valuable contribution to mathematics in the candidate's area of concentration. Upon advancement to candidacy a student must form a Thesis Committee, a subcommittee of the Advancement Examination Committee, consisting of at least three faculty members and chaired by the student's advisor. The committee guides and supervises the candidate's research, study, and writing of the dissertation; conducts an oral defense of the dissertation; and recommends that the Ph.D. be conferred upon approval of the doctoral dissertation. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Qualifying Examinations

Ph.D. qualifying examinations are given in Algebra, Complex Analysis, and Real Analysis. All students seeking the Ph.D. degree must successfully complete two examinations before the end of the third year of entering the graduate program. Additionally, all students entering with an M.S. degree from another institution must pass one exam within one year.

Only two attempts are allowed for a Ph.D. student on each exam.

Area Requirements

Ph.D. students will choose from one of six areas of specialization in the Mathematics Department, which determines course work requirements. Each area of specialization will have a core course, which the Department will do its best to offer each year. The Department will offer other courses every other year, or more frequently depending on student demands and other Department priorities.

Algebra: Mathematics 230A-B-C (core), 232A-B-C, 233A-B-C, 234A-B-C, 235A-B-C, 239A-B-C.

Analysis: Mathematics 210A-B-C (core), 220A-B-C (core), 260A-B-C, Math 295A-B-C.

Applied and Computational Mathematics: Mathematics 290A-B-C (core), 225A-B-C, 226A-B-C, 227A-B-C, 295A-B-C.

Geometry and Topology: Mathematics 218A-B-C (core), 222A-B-C, 240A-B-C, 245A-B-C, 250A-B-C .

Logic: Mathematics 280A-B-C (core), 281A-B-C, 282A-B-C.

Probability: Mathematics 210A-B-C, 201A-B-C, 270A-B-C (core), 271A-B-C (core), 272A-B-C (core).

GRADUATE PROGRAM IN MATHEMATICAL AND COMPUTATIONAL BIOLOGY

The graduate program in Mathematical and Computational Biology (MCB) is a one-year "gateway" program designed to function in concert with selected department programs, including the Ph.D. in Mathematics. Detailed information is available online at http://mcsb.bio.uci.edu/ and in the School of Biological Sciences section of the *Catalogue*.

Courses in Mathematics

(Schedule of Classes **designation: Math)**

LOWER-DIVISION

1A-B Pre-Calculus. Lecture, three hours; discussion, two hours.

1A (0) F. Basic equations and inequalities, linear and quadratic functions, and systems of simultaneous equations. Four units of workload credit only.

1B (4) F, W, Summer. Preparation for calculus and other mathematics courses. Exponentials, logarithms, trigonometry, polynomials, and rational functions. Satisfies no requirements other than contribution to the 180 units required for graduation. Prerequisite: Mathematics 1A, satisfactory performance on the algebra or pre-calculus placement examinations offered periodically by the Mathematics Department, or consent of instructor.

2A-B Single-Variable Calculus (4-4) F, W, S, Summer. Lecture, three hours; discussion, two hours. **2A:** Introduction to derivatives, calculation of derivatives of algebraic and trigonometric functions; applications including curve sketching, related rates, and optimization. Antiderivatives. Prerequisite: pass the UCI Calculus Placement Test no more than one year before the start of the quarter in which Mathematics 2A will be taken, or receive a grade of C (2.0) or better in Mathematics 1B at UCI, or receive a score of 3 on the AP Calculus AB exam. **2B:** Definite integrals; the Fundamental theorem of calculus. Applications of integration including finding areas and volumes. Techniques of integration. Logarithmic and exponential functions. Polar coordinates. Prerequisite for Mathematics 2B: 2A. **(V)**

2D-E Multivariable Calculus. Lecture, three hours; discussion, two hours.

2D (4) F, W, S, Summer. Differential and integral calculus of real-valued functions of several real variables, including applications. Prerequisites: Mathematics 2A-B. Mathematics 2D and H2D may not both be taken for credit. **(V)**

2E (4) F, W, S, Summer. The differential and integral calculus of vector-valued functions. Implicit and inverse function theorems. Line and surface integrals, divergence and curl, theorems of Green, Gauss, and Stokes. Prerequisite: 2D. Mathematics 2E and H2E may not both be taken for credit.

H2D-E Honors Multivariable Calculus (4-4) W, S. Lecture, three hours; discussion, two hours. Covers the same material as Mathematics 2D-E, but with a greater emphasis on the theoretical structure of the subject matter. Especially recommended for prospective Mathematics majors and others with a particular interest in mathematics. Satisfies the same requirements and prerequisites as 2D-E. Prerequisites for H2D: a grade of B (3.0) or better in Mathematics 2B or a score of 4 or 5 on the Advanced Placement Calculus BC examination; for H2E: a grade of C (2.0) or better in Mathematics H2D. Mathematics 2D-E and H2D-E may not both be taken for credit. (H2D: **V)**

2J Infinite Series and Basic Linear Algebra (4) F, W, S, Summer. Lecture, three hours; discussion, two hours. Systems of linear equations: matrix operations; determinants; eigenvalues, and eigenvectors. Infinite sequences and series. Complex numbers. Prerequisites: Mathematics 2A-B. **(V)**

3A Introduction to Linear Algebra (4) F, W, S. Lecture, three hours; discussion, two hours. Vectors, matrices, linear transformations, dot products, determinants, systems of linear equations, vector spaces, subspaces, dimension. Corequisite: Mathematics 13. Prerequisite: Mathematics 2J or 4. Mathematics 3A and 6G may not both be taken for credit.

3D Elementary Differential Equations (4) F, W, S, Summer. Lecture, three hours; discussion, two hours. Linear differential equations, variation of parameters, constant coefficient cookbook, systems of equations, Laplace transforms, series solutions. Further topics as time permits. Prerequisites: Mathematics 2D and 2J.

4 Mathematics for Economists (4) F, S. Lecture, three hours; discussion, two hours. Topics in linear algebra and multivariable differential calculus suitable for economic applications. Prerequisites: Mathematics 2A-B. No credit for Mathematics 4 if taken after both Mathematics 2J and 2D. **(V)**

5 Mathematics of Compound Interest (4) F, W, S, Summer. Lecture, three hours. Introduction to fundamental concepts of financial mathematics and their application in calculating present and accumulated values for various streams of cash flows. Topics include definition and simple problems in compound interest; basic/advanced annuities; the yield curve; amortization; financial analysis. Prerequisites: Mathematics 2A-B.

6B Boolean Algebra and Logic (4) W, S, Summer. Lecture, three hours; discussion, two hours. Relations and their properties; Boolean algebras, formal languages; finite automata. Prerequisite: high school mathematics through trigonometry. Same as ICS 6B. **(V)**

6D Discrete Mathematics for Computer Science (4) F, S, Summer. Lecture, three hours; discussion, two hours. Covers essential tools from discrete mathematics used in computer science with an emphasis on the process of abstracting computational problems and analyzing them mathematically. Topics include: mathematical induction, combinatorics, and recurrence relations. Prerequisite: high school mathematics through trigonometry. Same as ICS 6D. Formerly Mathematics 6A. **(V)**

6G Linear Algebra (4) F, W, S, Summer. Lecture, three hours; discussion, two hours. Linear equations, vector spaces and subspaces, linear functions and matrices, linear codes, determinants, scalar products. Prerequisite: high school mathematics through trigonometry. Mathematics 6G and 3A may not both be taken for credit. Formerly Mathematics 6C. NOTE: Mathematics majors must take 3A. **(V)**

7 Basic Statistics (4) F, W, S, Summer. Lecture, three hours; discussion, one to two hours. Introduces basic inferential statistics including confidence intervals and hypothesis testing on means and proportions, t-distribution, Chi Square, regression and correlation. F-distribution and nonparametric statistics included if time permits. Same as Statistics 7. Only one course from Mathematics 7/Statistics 7, Statistics 8, Management 7, or Biological Sciences 7 may be taken for credit. No credit for Mathematics 7/Statistics 7 if taken after Mathematics 67/Statistics 67. **(V)**

8 Explorations in Functions and Modeling (4) S. Lecture, three hours; discussion, one hour. Explorations of applications and connections in topics in algebra, geometry, calculus, and statistics for future secondary math educators. Emphasis on nonstandard modeling problems. Corequisite: Mathematics 2A.

13 Introduction to Abstract Mathematics (4) F, W, S. Lecture, three hours; discussion, two hours. The style of precise definition and rigorous proof which is characteristic of modern mathematics. Topics include set theory, equivalence relations, proof by mathematical induction, and number theory. Students construct original proofs to statements. Prerequisite: Mathematics 2A or Mathematics 6D/ICS 6D.

67 Introduction to Probability and Statistics for Computer Science (4) S. Lecture, three hours; discussion, two hours. Introduction to the basic concepts of probability and statistics with discussion of applications to computer science. Prerequisites: Mathematics 2B and Mathematics 6D/ICS 6D. No credit for Mathematics 7/Statistics 7 or Management 7 if taken after Mathematics 67/Statistics 67. Same as Statistics 67. **(V)**

77A, B, C, D Topics in Mathematics and Computation in the Digital Age. Lecture, three hours; laboratory, two hours. Corequisite: Mathematics 2J or 6G, or consent of instructor. Prerequisites: Mathematics 2A-B; ICS 21/ CSE21 or Informatics 41 or consent of instructor. First- and second-year students only.

77A Introduction to Signal Processing (4). Signals in MATLAB; blurring, mixing, filtering; elements of linear algebra, statistics, optimization; blind matrix inversion; de-correlation method, stochastic gradient descent method, applications to sounds and images. Same as ICS 77A. **(II** or **V)**

77B Introduction to Collaborative Filtering (4). Basic concepts of collaborative filtering; clustering; matrix factorization and principal components analysis; regression; classification; naive Bayes classifier, decision trees, Perceptron (neural networks). Same as ICS 77B. **(II** or **V)**

77C Introduction to Image Processing (4). Image de-noising, de-blurring, low pass filtering; image segmention and classification; sparse representation; visualization. Same as ICS 77C. **(II** or **V)**

77D Introduction to Game Simulation and Analysis (4). Combinatorial Game Theory—game classification, tree graphs, strategy analysis, Sprague Grundy functions, Bouton's Theorem; Zero-Sum and General-Sum Game Theory—payoff matrices, Minimax Theorem, Nash equilibrium; machine learning—search algorithms. Same as ICS 77D. **(II** or **V)**

UPPER-DIVISION

NOTE: Some of the upper-division courses listed below have one or two hours of discussion weekly in addition to the lectures. Not all courses are offered every year.

105A-B Numerical Analysis (4-4) F, W. Lecture, three hours. Introduction to the theory and practice of numerical computation. **105A:** Floating point arithmetic, roundoff; solving transcendental equations; quadrature; linear systems, eigenvalues, power method. Corequisite: Mathematics 105LA if offered. Prerequisites: Mathematics 2J; some acquaintance with computer programming. Mathematics 105A and Engineering MAE185 may not both be taken for credit. **105B:** Lagrange interpolation, finite differences, splines, Padé approximations; Gaussian quadrature; Fourier series and transforms. Corequisite: Mathematics 105LB if offered. Prerequisite: Mathematics 105A.

105LA-LB Numerical Analysis Laboratory (1-1) F, W. Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 105A-B. Corequisite: concurrent enrollment in Mathematics 105A-B.

107 Numerical Differential Equations (4) S. Lecture, three hours. Theory and applications of numerical methods to initial and boundary-value problems for ordinary and partial differential equations. Corequisite: concurrent enrollment in Mathematics 107L if offered. Prerequisites: Mathematics 3D and 105A-B.

107L Numerical Differential Equations Laboratory (1) S. Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 107. Corequisite: concurrent enrollment in Mathematics 107.

112A-B-C Introduction to Partial Differential Equations and Applications (4-4-4). Lecture, three hours. Introduction to ordinary and partial differential equations and their applications in engineering and science. Basic methods for classical PDEs (potential, heat, and wave equations). **112A:** Classification of PDEs, separation of variables and series expansions, special functions, eigenvalue problems. **112B:** Green functions and integral representations, method of characteristics. **112C:** Galerkin method and other discretization techniques. Prerequisites for 112A: Mathematics 2D, 3D; for 112B: 2E and 112A.

114A Applied Complex Analysis (4) F. Lecture, three hours. Introduction to complex functions and their applications to engineering and science. Complex numbers, elementary functions; analytic functions; complex integration; power series; residue theory; conformal maps; applications. Prerequisites: Mathematics 2D, 2J. Mathematics 2E and 3D recommended. Mathematics 114A may not be taken for credit after Mathematics 147.

115 Mathematical Modeling (4). Lecture, three hours. Mathematical modeling and analysis of phenomena that arise in engineering physical sciences, biology, economics, or social sciences. Corequisite or prerequisite: Mathematics 112A or Engineering MAE140. Prerequisites: Mathematics 2D; 3A or 6G; 3D.

118A-B-C The Theory of Differential Equations (4-4-4). Lecture, three hours; discussion, one hour. Introductory theoretical course in ordinary and/or partial differential equations. Existence and uniqueness of solutions, methods of solution, the geometry of solutions. Students are expected to follow and understand proofs. Prerequisites: Mathematics 3D and 140A.

120A Introduction to Abstract Algebra: Groups (4) F, W. Lecture, three hours; discussion, two hours. Axioms for group theory; permutation groups, matrix groups. Isomorphisms, homomorphisms, quotient groups. Advanced topics as time permits. Special emphasis on doing proofs. Prerequisites: Mathematics 3A or 6G; 13.

120B Introduction to Abstract Algebra: Rings and Fields (4) W, S. Lecture, three hours; discussion, two hours. Basic properties of rings; ideals, quotient rings; polynomial and matrix rings. Elements of field theory. Prerequisite: Mathematics 120A.

120C Introduction to Abstract Algebra: Galois Theory (4) S. Lecture, three hours. Galois Theory: proof of the impossibility of certain ruler-and-compass constructions (squaring the circle, trisecting angles); nonexistence of analogues to the "quadratic formula" for polynomial equations of degree 5 or higher. Prerequisite: Mathematics 120B. Formerly Mathematics 124.

121A-B Linear Algebra (4-4). Lecture, three hours; discussion, two hours. Introduction to modern abstract linear algebra. Special emphasis on students doing proofs. **121A:** Vector spaces, linear independence, bases, dimension. Linear transformations and their matrix representations. Theory of determinants. **121B:** Canonical forms; inner products; similarity of matrices. Prerequisites for 121A: Mathematics 3A or 6G; 13.

NOTE: Only one course from Mathematics 130A, 131A, and 132A may be taken for credit. Any one of these courses, or Mathematics 67 and either 6G or 3A, will satisfy the prerequisite for Mathematics 130B, 131B, and 132B.

130B-C Probability and Stochastic Processes (4-4). Lecture, three hours. Introductory course emphasizing applications. **130B:** Conditional probability and conditional expectations; Markov chains. **130C:** Exponential distribution and Poisson process; Brownian motion; additional topics, such as option pricing, as time permits. Prerequisites: for 130B: Mathematics 2A-B, and either 130A, 131A, 132A, Statistics 120A, or Mathematics 67 and either 6G or 3A; for 130C: Mathematics 130B.

131A-B-C Introduction to Probability and Statistics (4-4-4). Lecture, three hours; discussion, one to two hours. Introductory course covering basic principles of probability and statistical inference. **131A:** Axiomatic definition of probability, random variables, probability distributions, expectation. **131B:** Point estimation, interval estimating, and testing hypotheses, Bayesian approaches to inference. **131C:** Linear regression, analysis of variance, model checking. Prerequisites for 131A-B: Mathematics 2A-B; 2D and 2J or 4; for 131C: Mathematics 131A-B; 3A or 6G. Same as Statistics 120A-B-C.

132B-C Discrete Probability and Mathematical Theory of Sample Surveys (4-4). Lecture, three hours. Sample selection, stratification, cluster sampling, double-sampling procedures, optimal allocation, probability-proportional-to-size sampling. Applications to problems in economics, business, public health, agriculture, and the social sciences. Prerequisites for 132B: Mathematics 2A-B, and either 130A, 131A, 132A, Statistics 120A, or Mathematics 67 and either 6G or 3A; for 132C: Mathematics 132B.

133A-B Statistical Methods with Applications to Finance (4-4) W, S. Lecture three hours; discussion, one hour. Introduction to Monte Carlo (MC) methods. **133A:** Overview of probability, statistics, financial concepts; linear and logistic regressions; time series models; Brownian motion; MC simulations. **133B:** Elliptic and parabolic partial differential equations; MC methods; vanilla and exotic derivatives; Greeks, portfolio management, and value-at-risk. Prerequisites for 133A: Mathematics 67 and either 2D or 4, or Mathematics 131A, or Statistics 120A; for 133B: Mathematics 133A.

140A-B Elementary Analysis (4-4). Lecture, three hours; discussion, two hours. Introduction to real analysis including convergence of sequences, infinite series, differentiation and integration, and sequences of functions. Students are expected to do proofs. Prerequisites: Mathematics 2D, 2J, 13.

140C-D Analysis in Several Variables (4-4). Lecture, three hours; discussion, two hours. **140C:** Rigorous treatment of multivariable differential calculus. Jacobians, Inverse and Implicit Function theorems. Prerequisites: some background in linear algebra (Mathematics 3A, 6G, or 2J), and 140B. **140D:** Rigorous treatment of multivariable integral calculus. Multiple integrals in $\mathbf{R}^n$; iterated integrals and Fubini's theorem; change-of-variables theorem; differential forms and Stokes' theorem. Prerequisites: Mathematics 2E and 140C.

141 Introduction to Topology (4) S. Lecture, three hours. The elements of naive set theory and the basic properties of metric spaces. Introduction to topological properties. Prerequisite: Mathematics 140A.

146 Fourier Analysis (4) S. Lecture, three hours. Rigorous introduction to the theory of Fourier series and orthogonal expansions. Fourier transform. Prerequisites: Mathematics 3D and 140A-B. Mathematics 112A recommended.

147 Complex Analysis (4) W. Rigorous treatment of basic complex analysis: complex numbers, analytic functions, Cauchy integral theory and its consequences (Morera's Theorem, Argument Principle, Fundamental Theorem of Algebra, Maximum Modulus Principle, Liouville's Theorem), power series, residue calculus harmonic functions, conformal mapping. Students are expected to do proofs. Corequisite: Mathematics 140B. Prerequisite: Mathematics 140A. Mathematics 114A may not be taken for credit after 147.

150 Introduction to Mathematical Logic (4) F. Lecture, three hours. First-order logic through the Completeness Theorem for predicate logic. Prerequisite: Mathematics 13. Only one course from Mathematics 150, Philosophy 105B, and Logic and Philosophy of Science 105B may be taken for credit.

151 Set Theory (4) W. Lecture, three hours. Axiomatic development; infinite sets; cardinal and ordinal numbers. Prerequisite: Mathematics 150. Only one course from Mathematics 151, Philosophy 105A, and Logic and Philosophy of Science 105A may be taken for credit.

152 Computability (4) S. Lecture, three hours. Computable functions; undecidability; Gödel's Incompleteness Theorem. Prerequisite: Mathematics 150. Only one course from Mathematics 152, Philosophy 105C, and Logic and Philosophy of Science 105C may be taken for credit.

161 Modern Geometry (4). Lecture, three hours. Euclidean geometry; Hilbert's axioms; absolute geometry; hyperbolic geometry; the Poincare models; geometric transformations. Prerequisites: Mathematics 2D and 13.

162A-B Introduction to Differential Geometry (4-4) F, W. Lecture, three hours. Applications of advanced calculus and linear algebra to the geometry of curves and surfaces in space. Prerequisites: Mathematics 2E, 3A, and 3D. *Not offered every year.*

171A-B Mathematical Methods in Operations Research. Lecture, three hours. *Offered summer only.*

171A Linear Programming (4). Simplex algorithm, duality, optimization in networks. Prerequisite: Mathematics 3A or 6G.

171B Nonlinear Programming (4). Conditions for optimality, quadratic and convex programming, search methods, geometric programming. Prerequisites: Mathematics 2D and either 3A or 6G.

173A-B Introduction to Cryptology (4-4). Lecture, three hours. Introduction to some of the mathematics used in the making and breaking of codes, with applications to classical ciphers and public key systems. The mathematics which is covered includes topics from number theory, probability, and abstract algebra. Prerequisites for 173A: Mathematics 2B, 3A or 6G, 13; for 173B: Mathematics 173A.

174A-B Modern Graph Theory I, II. Lecture, three hours. An introduction to fundamental concepts of graph theory by developing abilities to produce examples, following and devising simple proofs, and current applications of graph theory.

174A Modern Graph Theory I (4). Topics include: graph types, matching in graphs; Menger's Theorem; Kuratowski's Theorem. Prerequisites: Mathematics 2B, 3A or 6G, 13.

174B Modern Graph Theory II (4). Topics include: coloring maps, plane graphs, vertices, and edges; Hadwiger's Conjecture; Hamilton Cycles; Ramsey Theory. Prerequisite: Mathematics 174A.

176 Mathematics of Finance (4). Lecture, three hours. Introduces the mathematics of finance with an emphasis on financial derivatives. After a review of certain tools from probability, statistics, and elementary differential and partial differential equations, concepts such as hedging, arbitrage, Puts, Calls, and the design of portfolios are discussed. Prerequisites: Mathematics 2A-B-J. Same as Economics 135.

180A-B Number Theory (4-4). Lecture, three hours; discussion, one hour. Introduction to number theory and applications. **180A:** Divisibility, prime numbers, factorization. Arithmetic functions. Congruences. Quadratic residue. Diophantine equations. Introduction to cryptography. Formerly Mathematics 180. **180B:** Analytic number theory, character sums, finite fields, discrete logarithm, computational complexity. Introduction to coding theory. Other topics as time permits. Prerequisites for 180A: Mathematics 2J and 13, or consent of instructor; for 180B: Mathematics 180A.

184 History of Mathematics (4). Lecture, three hours. Topics vary from year to year. Some possible topics: mathematics in ancient times; the development of modern analysis; the evolution of geometric ideas. Students are assigned individual topics for term papers. Prerequisites: Mathematics 3D, 120A, 140A. *Not offered every year.*

189 Special Topics in Mathematics (4). Lecture, three hours. Offered from time to time, but not on a regular basis. Content and prerequisites vary with the instructor. May be repeated for credit as topics vary.

192 Studies in the Learning and Teaching of Secondary Mathematics (2) W, S. Lecture, two hours; fieldwork, two hours. Enrollment limited to upper-division Mathematics majors participating in the Mathematics for Education specialization, or students in related majors. Admission requires approval of Department Tutor Supervisor. Focus is on historic and current mathematical concepts related to student learning and effective math pedagogy, with fieldwork in grades 6–14. For students *not* in the specialization in Mathematics for Education, this course satisfies no requirements other than contribution to the 180 units required for graduation. Pass/Not Pass only. Prerequisites: Mathematics 2D; 2J; 3D; 13 or 120A or 140A. May be taken twice for credit.

193 SMPP Capstone (2) W, S. Lecture, two hours; fieldwork, two hours. Capstone course for the Mathematics Subject-Matter Preparation (SMP) program. Engages students in reviewing and conducting current research on significant issues related to the teaching and learning of mathematics in the secondary classroom. Corequisite: Mathematics 192 recommended. May be taken twice for credit.

194 Problem-Solving Seminar (2). Develops ability in analytical thinking and problem solving, using problems of the type found in the Mathematics Olympiad and the Putnam Mathematical Competition. Students taking the course in fall will prepare for and take the Putnam examination in December. Pass/Not Pass only. NOTE: satisfies no requirement other than contribution to the 180 units required for graduation. Recommended for prospective teachers. May be taken twice for credit.

H195A-B Honors Seminar (4-4) W, S. Topics vary from year to year. Provides an integrative experience, including problem-solving and oral and written presentations. Required for the Honors Program in Mathematics and open to others with consent of instructor.

199A-B-C Special Studies in Mathematics (4-4-4) F, W, S. Supervised reading. For outstanding undergraduate mathematics majors in supervised but independent reading or research of mathematical topics. Prerequisite: consent of Department. NOTE: Cannot normally be used to satisfy departmental requirements.

GRADUATE

NOTE: Undergraduates who are not in the Honors Program and wish to take 205A or 206A should first get the consent of the instructor.

205A-B-C Introduction to Graduate Analysis (5-5-5) F, W, S. Lecture, four hours. Construction of the real number system, topology of the real line, concepts of continuity, differential and integral calculus, sequences and series of functions, equicontinuity, metric spaces, multivariable differential and integral calculus, implicit functions, curves and surfaces. Prerequisites: Mathematics 2A-B, 2J, 2D, 2E, 3A; or equivalent or consent of instructor.

206A-B-C Introduction to Graduate Algebra (5-5-5). Lecture, four hours. Introduction to abstract linear algebra, including bases, linear transformation, eigenvectors, canonical forms, inner products, symmetric operators. Introduction to groups, rings, and fields including examples of groups, group actions, Sylow theorems, modules over principal ideal domains, polynomials and Galois groups. Prerequisite: Mathematics 3A or equivalent or consent of instructor.

210A-B-C Real Analysis (4-4-4) F, W, S. Lecture, three hours. Measure theory, Lebesgue integral, signed measures, Radon-Nikodym theorem, functions of bounded variation and absolutely continuous functions, classical Banach spaces, Lp spaces, integration on locally compact spaces and the Riesz-Markov theorem, measure and outer measure, product measure spaces. Prerequisites: Mathematics 140A-B-C or consent of instructor.

211A-B-C Topics in Analysis (4-4-4) F, W, S. Lecture, three hours. A continuation of Mathematics 210A-B-C; topics selected by instructor.

218A-B-C Introduction to Manifolds and Geometry (4-4-4) F, W, S. Lecture, three hours. General topology and fundamental groups, covering space; Stokes theorem on manifolds, selected topics on abstract manifold theory. Prerequisites: Mathematics 205A-B-C or consent of instructor.

220A-B-C Analytic Function Theory (4-4-4) F, W, S. Lecture, three hours. Standard theorems about analytic functions. Harmonic functions. Normal families. Conformal mapping. Prerequisites: Mathematics 140A-B-C or equivalent or consent of instructor.

222A-B-C Several Complex Variables and Complex Geometry (4-4-4) F, W, S. Lecture, three hours. Several complex variables, d-bar problems, mappings, Kaehler geometry, Le Rham and Dolbeault Theorems, Chern classes, Hodge Theorems, Calabi conjecture, Kahler-Einstein geometry, Monge-Ampere. Prerequisites: Mathematics 218A-B-C and 220A-B-C, or consent of instructor.

225A-B-C Introduction to Numerical Analysis and Scientific Computing (4-4-4). Lecture, three hours. Introduction to fundamentals of numerical analysis from an advanced viewpoint. **225A:** Error analysis, approximation of functions, nonlinear equations. **225B-C:** Numerical linear algebra, numerical solutions of differential equations; stability. Prerequisites: Mathematics 3D; 105A-B or 140A-B; 121A; and Mathematics 112A or Engineering MAE140.

226A-B-C Computational Differential Equations (4-4-4). Lecture, three hours. Finite difference and finite element methods. Quick treatment of functional and nonlinear analysis background: weak solution, Lp spaces, Sobolev spaces. Approximation theory. Fourier and Petrov-Galerkin methods; mesh generation. Elliptic, parabolic, hyperbolic cases in 226A-B-C, respectively. Prerequisites: basic differential equations, such as in Mathematics 3D and either Mathematics 112A or Engineering MAE140; plus either abstract analysis (e.g., Mathematics 140A-B) or numerical analysis (Mathematics 105A-B or equivalent).

227A-B Mathematics and Computational Biology (4-4). Solution techniques and numerical methods for models in biology and life sciences; dynamical systems; ordinary differential equations; reaction-diffusion equations; temporal and spatial dynamics; stability; models for genetic and developmental patterns, cancers, tissue growth, and signaling networks. **227A:** Analytical methods. **227B:** Computer simulations. Prerequisites: Mathematics 2A-B or equivalent.

230A-B-C Algebra (4-4-4) F, W, S. Lecture, three hours. Elements of the theories of groups, rings, fields, modules. Galois theory. Modules over principal ideal domains. Artinian, Noetherian, and semisimple rings and modules. Prerequisites: Mathematics 120A and 121A-B or equivalent, or consent of instructor.

232A-B-C Algebraic Number Theory (4-4-4) F, W, S. Lecture, three hours. Prime number theorem, quadratic reciprocity, Gauss sums, diophantine equations, zeta functions over finite fields. Algebraic integers, prime ideals, class groups, Dirichlet unit theorem, localization, completion, Galois extensions, Chebatarev density theorem. Representations of finite groups, L-functions, Hecke L-functions. Introduction to class field theory. Prerequisites: Mathematics 230A-B-C or consent of instructor.

233A-B-C Algebraic Geometry (4-4-4). Lecture, three hours. Basic commutative algebra and classical algebraic geometry. Algebraic varieties, morphisms, rational maps, blow ups. Theory of schemes, sheaves, divisors, cohomology. Algebraic curves and surfaces, Riemann-Roch theorem, Jocobian classification of curves and surfaces.

234A-B-C Topics in Algebra (4-4-4). Lecture, three hours. Group theory, homological algebra, and other selected topics. Prerequisites: Mathematics 230A-B-C or consent of instructor.

235A-B-C Mathematics of Cryptography (4-4-4). Lecture, three hours. **235A:** Mathematics of public key cryptography: encryption and signature schemes; RSA; factoring; primality testing; discrete log-based cryptosystems, elliptic and hyperelliptic curve cryptography. **235B:** Continuation of 235A. **235C:** Topics to be determined by instructor. Prerequisites: Mathematics 230A-B-C or consent of instructor.

239A-B-C Analytic Methods in Arithmetic Geometry (4-4-4) F, W, S. Lecture, three hours. Riemann zeta function. Dirichlet L-functions, prime number theorem, zeta functions over finite fields, sieve methods, zeta functions of algebraic curves, algebraic coding theory. L-functions over number fields, L-functions of modular forms. Eisenstein series. Prerequisites: Mathematics 220A-B-C and 230A-B-C, or consent of instructor.

240A-B-C Differential Geometry (4-4-4). Lecture, three hours. Riemannian manifolds, connections, curvature and torsion. Submanifolds, mean curvature, Gauss curvature equation. Geodesics, minimal submanifolds, first and second fundamental forms, variational formulas. Comparison theorems and their geometric applications. Hodge theory applications to geometry and topology. Prerequisite: consent of instructor.

245A-B-C Topics in Differential Geometry (4-4-4). Lecture, three hours. Continuation of Mathematics 240A-B-C. Topics to be determined by the instructor. Prerequisites: Mathematics 240A-B-C or consent of instructor. May be repeated for credit as topics vary.

250A-B-C Algebraic Topology (4-4-4). Lecture, three hours. Provides fundamental materials in algebraic topology: fundamental group and covering space, homology and cohomology theory, and homotopy group. Prerequisite: Mathematics 230A or consent of instructor.

260A-B-C Functional Analysis (4-4-4). Lecture, three hours. Normed linear spaces, Hilbert spaces, Banach spaces, Stone-Weierstrass Theorem, locally convex spaces, bounded operators on Banach and Hilbert spaces, the Gelfand-Neumark Theorem for commutative C*-algebras, the spectral theorem for bounded self-adjoint operators, unbounded operators on Hilbert spaces. Prerequisites: Mathematics 210A-B-C and 220A-B-C or consent of instructor.

270A-B-C Probability (4-4-4). Lecture, three hours. Probability spaces, distribution and characteristic functions. Strong limit theorems. Limit distributions for sums of independent random variables. Conditional expectation and martingale theory. Stochastic processes. Prerequisites: Mathematics 130A-B-C and 210A-B-C or consent of instructor.

271A-B-C Stochastic Processes (4-4-4). Lecture, three hours. Processes with independent increments, Wiener and Gaussian processes, function space integrals, stationary processes, Markov processes. Prerequisites: Mathematics 210A-B-C or consent of instructor.

272A-B-C Probability Models (4-4-4) F, W, S. Lecture, three hours. Spin systems, Ising models, contact process, exclusion process, percolation, increasing events, critical probabilities, sub- and super-critical phases, scaling theory, oriented percolation, concentration of measure, Gaussian fields, Borell's inequality, chaining, entropy. Prerequisites: Mathematics 271A-B-C or equivalent.

274 Topics in Probability (4-4-4). Lecture, three hours. Selected topics, such as theory of stochastic processes, martingale theory, stochastic integrals, stochastic differential equations. Prerequisites: Mathematics 270A-B-C or consent of instructor. May be repeated for credit as topics vary.

277A-B-C Topics in Mathematical Physics (4-4-4). Lecture, three hours. Topics to be determined by the instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

280A-B-C Mathematical Logic (4-4-4). Lecture, three hours. Basic set theory; models, compactness, and completeness; basic model theory; Incompleteness and Gödel's Theorems; basic recursion theory; constructible sets. Prerequisite: consent of instructor.

281A-B-C Set Theory (4-4-4). Lecture, three hours. Ordinals, cardinals, cardinal arithmetic, combinatorial set theory, models of set theory, Gödel's constructible universe, forcing, large cardinals, iterate forcing, inner model theory, fine structure. Prerequisites: Mathematics 280A-B-C or consent of instructor.

282A-B-C Model Theory (4-4-4). Lecture, three hours. Languages, structures, compactness and completeness. Model-theoretic constructions. Omitting types theorems. Morley's theorem. Ranks, forking. Model completeness. O-minimality. Applications to algebra. Prerequisites: Mathematics 280A-B-C.

285A-B-C Topics in Mathematical Logic (4-4-4). Lecture, three hours. Continuation of Mathematics 280A-B-C. Topics to be conducted by the instructor. Prerequisite: Mathematics 280A-B-C or consent of instructor. May be repeated for credit as topics vary.

290A-B-C Methods in Applied Mathematics (4-4-4). Lecture, three hours. Introduction to ODEs and dynamical systems: existence and uniqueness. Equilibria and periodic solutions. Bifurcation theory. Perturbation methods: approximate solution of differential equations. Multiple scales and WKB. Matched asymptotic. Calculus of variations: direct methods, Euler-Lagrange equation. Second variation and Legendre condition.

291A-B-C Topics in Applied and Computational Mathematics (4-4-4) F, W, S. Lecture, three hours. Topics to be determined by instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

295A-B-C Partial Differential Equations (4-4-4). Lecture, three hours. Theory and techniques for linear and nonlinear partial differential equations. Local and global theory of partial differential equations: analytic, geometric, and functional analytic methods. Prerequisites: Mathematics 112A-B-C, 210A-B-C or equivalent, or consent of instructor.

296 Topics in Partial Differential Equations (4). Lecture, three hours. Continuation of Mathematics 295A-B-C. Topics to be determined by the instructor. Prerequisites: Mathematics 295A-B-C or consent of instructor. May be repeated for credit as topics vary.

297 Mathematics Colloquium (1). Weekly colloquia on topics of current interest in mathematics. Satisfactory/Unsatisfactory Only. May be repeated for credit.

298A-B-C Seminar (1 to 3) F, W, S. Seminars organized for detailed discussion of research problems of current interest in the Department. The format, content, frequency, and course value are variable. Prerequisite: consent of the Department. May be repeated for credit.

299A-B-C Supervised Reading and Research (1 to 12) F, W, S, Summer. May be repeated for credit.

399 University Teaching (1 to 4) F, W, S. Limited to Teaching Assistants. Does not satisfy any requirements for the Master's degree. Satisfactory/Unsatisfactory Only. May be repeated for credit.

COURSES IN PHYSICAL SCIENCES

***(Schedule of Classes* designation: Phy Sci)**

5 California Teach 1: Introduction to Science and Mathematics Teaching (3) F, W, S. Seminar, three hours. First in a series for students interested in becoming middle or high school teachers of mathematics or science. Students gain an understanding of effective, research-based teaching strategies. Includes supervised field experience in a K–12 classroom. Same as Biological Sciences 14. **(IX)**

105 California Teach 2: Middle School Science and Mathematics Teaching (3) F, W. Seminar, three hours. Second in a series for students interested in becoming middle or high school teachers of mathematics or science. Students gain an understanding of effective, research-based teaching strategies for grades 6–8. Includes supervised field experience in a middle school classroom. Prerequisite: Physical Sciences 5. Same as Biological Sciences 101. **(IX)**

106 California Teach 3: High School Science and Mathematics Teaching (2) W. Seminar, 1.5 hours; field work, 1.5 hours. Capstone of a series of three seminars for students interested in becoming secondary mathematics or science teachers. Meets six times for students to understand effective, research-based teaching strategies. Includes an opportunity to experience teaching in a high school. Prerequisites: Physical Sciences 5 and 105. Same as Biological Sciences 102.

139 Technical Writing and Communication Skills (4) F, W, S. Lecture, three hours. Workshop in writing technical reports, journal articles, proposals. Oral presentations. Communicating with the public. May not be used in satisfaction of any School or departmental requirement. Prerequisites: upper-division standing; satisfaction of the lower-division writing requirement. Open only to Physical Sciences majors.

DEPARTMENT OF PHYSICS AND ASTRONOMY

4129 Frederick Reines Hall; (949) 824-6911
William H. Parker, **Department Chair**

Faculty

Jason Alicea, Ph.D. University of California, Santa Barbara, *Assistant Professor of Physics* (theoretical condensed matter physics)
Myron Bander, Ph.D. Columbia University, *Professor Emeritus of Physics* (elementary particle theory)
Aaron Barth, Ph.D. University of California, Berkeley, *Associate Professor of Physics* (observational astrophysics)
Elizabeth Barton, Ph.D. Harvard University, *Assistant Professor of Physics* (observational cosmology and astrophysics)
Steven Barwick, Ph.D. University of California, Berkeley, *Professor of Physics* (experimental high-energy particle astrophysics)
Gregory A. Benford, Ph.D. University of California, San Diego, *Professor Emeritus of Physics* (plasma physics and astrophysics)
James Bullock, Ph.D. University of California, Santa Cruz, *Associate Professor of Physics and Gary McCue Administrative Term Chair in Cosmology* (theoretical astrophysics and cosmology)
David A. Buote, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Physics* (observational astrophysics and cosmology)
Kieron Burke, Ph.D. University of California, Santa Barbara, *Professor of Chemistry and Physics* (theoretical condensed matter)
David Casper, Ph.D. University of Michigan, *Associate Professor of Physics* (experimental particle physics)
Gary A. Chanan, Ph.D. University of California, Berkeley, *Professor of Physics* (observational astrophysics)
Liu Chen, Ph.D. University of California, Berkeley, *Professor of Physics* (plasma theory)
Mu-Chun Chen, Ph.D. University of Colorado at Boulder, *Assistant Professor of Physics* (elementary particle theory)
Alexander (Sasha) Chernyshev, Ph.D. Russian Academy of Sciences, *Associate Professor of Physics* (condensed matter theory)
Philip G. Collins, Ph.D. University of California, Berkeley, *Associate Professor of Physics* (experimental condensed matter physics and biological physics)
Asantha Cooray, Ph.D. University of Chicago, *UCI Chancellor's Fellow and Associate Professor of Physics* (theoretical astrophysics and cosmology)
Michael B. Dennin, Ph.D. University of California, Santa Barbara, *Professor of Physics* (experimental condensed matter physics and biological physics)
Igor Dzyaloshinskii, Ph.D. Institute for Physical Problems, *Professor Emeritus of Physics* (condensed matter theory)
Jonathan Lee Feng, Ph.D. Stanford University, *Professor of Physics* (elementary particle theory and cosmology)
Zachary Fisk, Ph.D. University of California, San Diego, *UCI Distinguished Professor of Physics* (experimental condensed matter physics)
Enrico Gratton, Ph.D. University of Rome, *Director of the Laboratory for Fluorescence Dynamics and Professor of Biomedical Engineering, Surgery, and Physics* (biological physics)
Steven Gross, Ph.D. University of Texas, Austin, *Professor of Developmental and Cell Biology, Biomedical Engineering, and Physics* (experimental biophysics and radiology)
Gultekin Gulsen, Ph.D. Bogazici University, *Associate Professor in Residence, Departments of Radiological Sciences, Physics and Astronomy, and Biomedical Engineering* (medical physics)
Herbert W. Hamber, Ph.D. University of California, Santa Barbara, *Professor of Physics* (elementary particle theory and gravitational physics)
William W. Heidbrink, Ph.D. Princeton University, *Professor of Physics* (experimental plasma physics)
Wilson Ho, Ph.D. University of Pennsylvania, *Donald Bren Professor of Physics and Chemistry* (experimental condensed matter, physics and chemistry)
Herbert Hopster, Ph.D. University of Aachen, *Professor of Physics* (experimental condensed matter physics)
Manoj Kaplinghat, Ph.D. Ohio State University, *Associate Professor of Physics* (theoretical cosmology and astrophysics))
David P. Kirkby, Ph.D. California Institute of Technology, *Professor of Physics* (experimental particle physics)
Ilya Krivorotov, Ph.D. University of Minnesota, *Assistant Professor of Physics* (experimental condensed matter physics)
Andrew J. Lankford, Ph.D. Yale University, *Professor of Physics* (experimental particle physics)
Jon M. Lawrence, Ph.D. University of Rochester, *Professor Emeritus of Physics* (experimental condensed matter physics)
Zhihong Lin, Ph.D. Princeton University, *Professor of Physics* (plasma theory)
Mark A. Mandelkern, Ph.D. University of California, Berkeley; M.D. University of Miami, *Professor of Physics* (experimental particle physics and medical physics)
Alexei A. Maradudin, Ph.D. University of Bristol, *Professor Emeritus of Physics* (condensed matter theory)
Meinhard E. Mayer, Ph.D. Parhon University, *Professor Emeritus of Physics* (mathematical physics)
Roger D. McWilliams, Ph.D. Princeton University, *Professor of Physics* (experimental plasma physics)
Douglas L. Mills, Ph.D. University of California, Berkeley, *Professor Emeritus of Physics* (condensed matter theory)
William R. Molzon, Ph.D. University of Chicago, *Professor of Physics* (experimental particle physics)
L. Tugan Muftuler, Ph.D. Middle East Technical University, *Assistant Professor in Residence, Departments of Radiological Sciences, Physics and Astronomy, and Cognitive Sciences* (medical physics)
Orhan Nalcioglu, Ph.D. University of Oregon, *Director, John Tu and Thomas Yuen Center for Functional Onco-Imaging and Professor, Departments of Radiological Sciences, Electrical Engineering and Computer Science, and Physics and Astronomy* (medical physics)
Riley Newman, Ph.D. University of California, Berkeley, *Professor Emeritus of Physics* (experimental particle physics and gravitational physics)

William H. Parker, Ph.D. University of Pennsylvania, *Department Chair and Professor of Physics* (experimental condensed matter physics and low-temperature physics)
Arvind Rajaraman, Ph.D. Stanford University, *Associate Professor of Physics* (elementary particle theory and gravitational physics)
Thorsten Ritz, Ph.D. University of Ulm, *Associate Professor of Physics* (theoretical biophysics)
John Rosendahl, M.S. University of California, Irvine, *Lecturer in Physics*
Norman Rostoker, D.Sc. Carnegie Institute of Technology, *Professor Emeritus of Physics* (plasma physics)
James E. Rutledge, Ph.D. University of Illinois, *Professor of Physics* (experimental condensed matter physics and low-temperature physics)
Nathan Rynn, Ph.D. Stanford University, *Professor Emeritus of Physics* (experimental plasma physics)
Jonas Schultz, Ph.D. Columbia University, *Professor Emeritus of Physics* (experimental particle physics)
Yuri Shirman, Ph.D. University of California, Santa Cruz, *Associate Professor of Physics* (elementary particle theory)
Dennis J. Silverman, Ph.D. Stanford University, *Professor Emeritus of Physics* (elementary particle theory)
Zuzanna Siwy, Ph.D. Silesian University of Technology, *Associate Professor of Physics* (experimental biophysics and condensed matter physics)
Tammy Smecker-Hane, Ph.D. The Johns Hopkins University, *Associate Professor of Physics* (observational astrophysics)
Henry W. Sobel, Ph.D. Case Institute of Technology, *Professor of Physics* (experimental particle physics)
Min-Ying (Lydia) Su, Ph.D. University of California, Irvine, *Professor and Professor in Residence, Departments of Radiological Sciences and of Physics and Astronomy* (biological physics and medical physics)
Peter Taborek, Ph.D. California Institute of Technology, *Director of the Institute for Surface and Interface Science (ISIS) and Professor of Physics* (experimental condensed matter physics and low-temperature physics)
Anyes Taffard, Ph.D. University of Liverpool, *Assistant Professor of Physics* (experimental particle physics)
Timothy Tait, Ph.D. Michigan State University, *Assistant Professor of Physics* (theoretical particle physics)
Virginia L. Trimble, Ph.D. California Institute of Technology, *Professor of Physics* (theoretical astronomy and scientometrics)
Gerard Van Hoven, Ph.D. Stanford University, *Professor Emeritus of Physics* (plasma physics)
Richard F. Wallis, Ph.D. Catholic University of America, *Professor Emeritus of Physics* (condensed matter theory)
Steven White, Ph.D. Cornell University, *Professor of Physics* (condensed matter theory and cosmology)
Daniel Whiteson, Ph.D. University of California, Berkeley, *Assistant Professor of Physics* (experimental particle physics)
Ruqian Wu, Ph.D. Institute of Physics, *Professor of Physics* (condensed matter theory)
Gaurang B. Yodh, Ph.D. University of Chicago, *Professor Emeritus of Physics* (experimental particle astrophysics)
Clare Yu, Ph.D. Princeton University, *Professor of Physics* (condensed matter theory and theoretical biophysics)

Physics is that branch of science concerned with the study of natural phenomena at the fundamental level. Physicists study the smallest particles of matter (quarks and leptons), nuclei, and atoms; the fundamental forces; the properties of solids, liquids, gases, and plasmas; the behavior of matter on the grand scale in stars and galaxies; and even the origin and fate of the universe. Other disciplines such as chemistry, biology, medicine, and engineering often build upon the foundations laid by physics.

The Department of Physics and Astronomy offers courses for students of various interests, from those in the humanities and social sciences, to those in biological sciences, and to those in physics, engineering, and other sciences. Faculty members are conducting active research in several forefront areas of physical research, and there is student access to specialized research areas such as astrophysics, cosmology, elementary particle, plasma, condensed matter, biological, and medical physics at both advanced and undergraduate course levels. The Department offers several interdisciplinary concentrations and tracks which include courses taught by faculty in Biological Sciences, Chemistry, Engineering, and Medicine. The faculty is vigorous, innovative, and engaged in a wide variety of research, education, and university and public service activities. The Department encourages student-faculty interaction.

Undergraduate Program

The goal of the undergraduate major in Physics is to develop expert problem solvers with a broad understanding of physical principles. The program is flexible and prepares students for careers in industrial research, applications programming, education, law, or business, as well as for graduate study in astronomy, biomedical physics, engineering, or physics. Annual mandatory meetings with faculty advisors assist students in selecting a program that matches their aptitudes and interests. In addition to the core Physics courses, students complete either a standard track (such as the track for future Ph.D. physicists), or one of the formal concentrations or specializations (in Applied Physics, Biomedical Physics, Computational Physics, Philosophy of Physics, Physics Education, or Astrophysics). In addition, Physics majors may find the minor in Earth and Atmospheric Sciences, offered by the Department of Earth System Science, to be of interest.

The three lower-division sequences in physics are distinguished by their intended audience, their mathematical prerequisites, and the extent to which they offer preparation for more advanced courses. These aspects of the beginning courses are summarized as follows:

Physics 3: *Intended audience:* Premedical students, Biological Sciences majors. *Prerequisites:* concurrent enrollment in Mathematics 2A. *Preparation for advanced courses:* Physics 7D with permission.

Physics 7: *Intended audience:* Physical Sciences and Engineering majors. *Prerequisite:* concurrent enrollment in Mathematics 2. *Preparation for advanced courses:* Physics 51A.

Physics 14-21: *Intended audience:* Nonscience majors. *Prerequisites:* none. *Preparation for advanced courses:* none.

Admission to the Major

Students may be admitted to the Physics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office and at http://www.changeofmajor.uci.edu. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of approved calculus and one year of calculus-based physics with laboratory for engineering and physics majors.

REQUIREMENTS FOR THE B.S. DEGREE IN PHYSICS

University Requirements: See pages 55–62.

School Requirements: None.

Departmental Requirements

Physics 7C-D-E with laboratory courses 7LC-LD; Mathematics 2A-B, 2D-E, 2J, 3D; Physics 50; Physics 61A-B*; Physics 52A-B-C; Physics 53 (or another programming course); Physics 111A-B, 112A-B, 113A, 115A, 121, and 125A; Physics 196C or H196C or 197; and five additional coherently related four-unit courses. (The five coherently related courses are normally satisfied by concentrations, specializations, and tracks.)

* For students transferring into the major after taking Physics 51A-B, Physics 51A-B will be accepted in place of Physics 61A-B.

Concentration in Applied Physics

Requirements: The six additional coherently related courses required for the major must be in engineering and be approved by the Department of Physics and Astronomy.

Concentration in Biomedical Physics

Requirements: Biological Sciences 97, 98, and 99; Chemistry 1A-B-C, 1LB-LC, 51A-B (or 52A-B).

Concentration in Computational Physics

Requirements: Three courses in computer science (Information and Computer Science 21, 22, 23), two courses in numerical analysis plus the accompanying laboratories (Mathematics 105A-B, 105LA-LB), and one advanced computational course (Mathematics 107, 107L).

Concentration in Philosophy of Physics

Requirements: One course selected from Philosophy or Logic and Philosophy of Science 30, 104, 105A-B-C, or Mathematics 150, 151, 152; Philosophy or LPS 31; Philosophy or LPS 140; one course from History 60, 135B, 135C, or an approved alternative elective; Physics 113B; three courses selected from Philosophy or LPS 102, 121, 141A, 141B, 141C, 141D.

Concentration in Physics Education

Requirements: Physics 193; Education 55; Physical Sciences 5 and 105; four courses selected from Biological Sciences 1A (or 93, 94), Chemistry 1A-B-C, Earth System Science 1 (or 25), 7, Physics 20A-B. Physical Sciences 106 is recommended. (With this concentration, a Secondary Teaching Certification option is available; see page 416.)

Specialization in Astrophysics

Requirements: Physics 139; three astrophysics courses selected from Physics 137, 138, 144, 145; and any two upper-division Physics electives.

Honors Program in Physics

The Honors Program in Physics provides an opportunity for selected students majoring in Physics to pursue advanced work in one of the research areas of the Department. Admission to the program is based on an application normally submitted by the sixth week of the spring quarter of the junior year. Applicants must have an overall grade point average of at least 3.4 and a grade point average in physics courses of 3.5 or better. (Exceptions to these procedures and standards may be granted in unusual circumstances.) In selecting students for the program, the Department considers evidence of ability and interest in research.

Students admitted to the program participate in a year-long course, Physics H196A-B-C, which includes two quarters of research and a final quarter in which a written thesis is submitted. If this work and the student's final GPA are deemed of honors quality by the program advisor, the student then graduates with Departmental Honors in Physics.

PLANNING A PROGRAM OF STUDY

Physics 3 is a one-year course suitable for premedical students, students majoring in Biological Sciences, and nonscience majors. It surveys most of the important branches of physics. Laboratory work accompanies the course. Nonscience majors with some mathematical skill may wish to consider Physics 3 as an alternative to Physics 14 through 21.

A student who decides to major in Physics after completing Physics 3 should meet with the Department Undergraduate Advisor for placement information.

Physics 7 is an intensive four-quarter course for students in Physical Sciences and Engineering who are interested in a careful quantitative approach to macroscopic physics. Laboratory work accompanies the course.

Physics courses numbered between 14 and 21 are general education courses intended for nonscience majors. The content and format of Physics 21 may vary from year to year.

The introduction to mathematical methods (Mathematics 2E, 2J, 3D, and Physics 50), microscopic physics (Physics 61A-B), and experimental physics (Physics 52A-B-C) are normally taken in the sophomore year.

Courses numbered 100 and above are for Physics majors and other qualified students. Courses numbered between 111 and 115 emphasize the mathematical and theoretical structures that have unified our understanding of nature. It should be noted that multi-quarter courses such as 111A-B must be taken and passed in sequential order. Any student who is so inclined may take more than the minimum one quarter of advanced laboratory work. Courses numbered between 132 and 149 introduce active subdisciplines in current research. Independent research (195, 196) is strongly encouraged. Physics 196C, H196C, and 197 stress the written and verbal communication of research findings.

Transfer students are specifically advised to seek individual consultation with the Department Undergraduate Advisor before deciding on a program of courses.

All Physics majors must complete the core courses listed below. By the end of the junior year, each student must also select a concentration or track.

Note that alternatives to Physics major requirements can be approved upon petition to the Department and the Office of the Associate Dean. Furthermore, exceptionally prepared students are allowed to enroll in graduate-level courses; to do so requires the approval of the Department Undergraduate Advisor.

Sample Program — Physics Core Curriculum

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2D
	Physics 7C, 7LC	Physics 7D, 7LD
Sophomore		
Mathematics 2E	Mathematics 3D	Physics 50
Mathematics 2J	Physics 61A	Physics 61B
Physics 7E	Physics 52B	Physics 52C
Physics 52A		
Junior		
Physics 111A	Physics 111B	Physics 53
	Physics 112A	Physics 112B
		Physics 113A
Senior		
Physics 115A	Physics 121	Physics 197
	Physics 125A	

For a student planning graduate study in physics, additional courses in advanced physics are strongly recommended.

Sample Program — Physics Graduate School Track

FALL	WINTER	SPRING
Junior		
Physics 115A or 116		
Senior		
Physics 113B	Physics 113C	Physics 115B
Physics 115A or 116	Physics Elective	Physics 125B
Physics Elective		Physics Elective

Students preparing for graduate school in atmospheric science or physical oceanography should complete the minor in Earth and Atmospheric Sciences.

The **Applied Physics concentration** is designed to provide appropriate education to students who anticipate a career in industrial or technological research. It combines the fundamental knowledge of physical processes obtained from physics courses with the technical knowledge obtained from engineering courses. A student is required to complete six courses in the School of Engineering approved by the Physics and Astronomy Department. Examples of appropriate courses include Engineering EECS70, EECS170A and 170LA, EECS170B and 170LB, EECS170C and 170LC, EECS174, EECS188, MAE120, MAE135, and MAE147. Upon completion of the Applied Physics concentration, the student will receive a B.S. degree in Physics.

Sample Program — Applied Physics Concentration

FALL	WINTER	SPRING
Junior		
	Engr. EECS70A	Engr. EECS70B, 70LB
Senior		
Engr. EECS170A, LA	Engr. EECS170B, LB Engr. EECS188	Physics 206

The **Biomedical Physics concentration** is designed for the student who anticipates a career in physics applied to biology and medicine, such as health physics or radiological physics, or who intends to work in a scholarly field which deals with the physical aspects of biology or medicine, such as molecular biology or physiology. Completion of requirements for the Physics major is required as are nine quarters of basic courses in biology and chemistry. Students who wish to follow the Biomedical Physics concentration are advised to seek guidance early in their college careers. The requirements are such that coordination of a program in the second year is essential.

Sample Program — Biomedical Physics Concentration

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Sophomore		
Chemistry 51A	Chemistry 51B	
Junior		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99

The **Computational Physics concentration** provides training for positions in software development in a wide variety of high-technology fields. For example, consider medical imaging software for magnetic resonance imaging. To write a first-rate program, one must understand the apparatus and analysis techniques (physics), use appropriate numerical techniques (numerical analysis), and employ a convenient object-oriented interface (computer science). The concentration develops this unique set of skills: physical and mathematical insight through the Physics curriculum, knowledge of modern computer programming techniques, and knowledge of numerical analysis.

Sample Program — Computational Physics Concentration

FALL	WINTER	SPRING
Junior		
ICS 21	ICS 22	ICS 23
Senior		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 107, 107L

The **Philosophy of Physics concentration** is concerned with the study of the conceptual history of physics, the method of inquiry that has led to our best physical theories, and the structure and interpretation of the theories themselves. Students take courses in deductive and inductive logic, the philosophy and history of physics, and quantum mechanics. The emphasis on careful argument makes this concentration useful for anyone who wishes to pursue a graduate degree in philosophy or law, or for other careers that employ both verbal and quantitative analysis.

The **Physics-Education concentration** is for students who plan a career in secondary education. An Education course, four general science courses, a research methods course, and two quarters of classroom experience complete the requirements for the concentration. Students are encouraged to take Physics 191 (outreach).

Secondary Teaching Certification Option: With *additional* course work and field experience offered through the UCI Cal Teach program, students who complete the concentration in Physics Education can also earn a California Preliminary Single Subject Teaching Credential. Completing the bachelor's degree, concentration, and teacher certification in four years is possible with careful, early planning. Additional courses required for teacher certification are Logic and Philosophy of Science 60; Education 109, 143A, 143B, 148, and two quarters of 158. Successful completion of Education 143A-B and 148 will be accepted in lieu of Physics 125A and 197 for Cal Teach students. For additional information about teacher certification requirements and enrollment procedures, see page 384. Interested students are strongly encouraged to contact the Physical Sciences Student Affairs Office or the Cal Teach Resource and Advising Center.

Sample Program — Concentration in Physics Education with Secondary Teaching Certification Option

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2D
(Physics 2)	Physics 7C, 7LC	Physics 7D, 7LD
Gen. Ed.	Gen. Ed.	Gen. Ed.
(Physics 99)	Physical Sciences 5	Gen. Ed.
Sophomore		
Physics 7E	Math. 3D	Physics 50
Math. 2J	Physics 61A	Physics 61B
Math. 2E	Physics 52B	Physics 52C
Physics 52A	Physics 193	Log. & Philo. Sci. 60
Physical Sciences 105		
Junior		
Physics 111A	Physics 111B	Physics 53
General Science	Physics 112A	Physics 112B
General Science	General Science	Physics 113A
Education 55	Education 143A	Education 143B
Senior		
Physics 115A	Gen. Ed.	Physics 121
General Science	Education 109	Gen. Ed.
Education 148	Education 158	Education 158

The Astrophysics specialization is primarily taken by two types of students, those planning on going on to graduate school in astronomy or astrophysics and those planning to work in aeronautics or astrophysics-related industries or government research laboratories after receiving their bachelor's degree. It also is an excellent focus for students who anticipate careers in science journalism, teaching, science administration, or public relations. The course work includes one upper-division astrophysics laboratory (139), three of four courses in astrophysics (137, 138, 144, 145), and two or more upper-division Physics courses. Of the Physics electives, students bound for graduate school are strongly advised to include Physics 113B, 115B, and 125B. Other recommended electives include Physics 116, 132, 134A, 135, and 136.

Sample Program — Astrophysics Specialization		
FALL	**WINTER**	**SPRING**
Junior		
Physics 116	Physics 137	Physics 144 or 145
Senior		
Physics 113B	Physics 138	Physics 115B
Physics 139		Physics 125B
		Physics 144 or 145

Graduate Program

The Department offers the M.S. and Ph.D. degrees in Physics. These degrees are awarded in recognition of demonstrated knowledge of the basic facts and theories of physics and of a demonstrated capacity for independent research. Active programs of research are underway in particle physics, nanophysics, biophysics, medical physics, condensed matter physics, low-temperature physics, plasma physics, gravitational physics, astrophysics, and cosmology.

In general, graduate study in the physics Ph.D. program is expected to be a full-time activity. Other proposed arrangements should be approved by the Graduate Committee. The normative time for completion of the Ph.D. is six years of full-time study, and the maximum time permitted is seven years. Students may pursue the M.S. degree on either a full-time or part-time basis.

Complementing the formal courses, the Department offers regular colloquia and informal seminars. Graduate students are members of an intellectual community and are expected to participate fully in departmental activities. Attendance at colloquia is considered an essential part of graduate study. In addition, there are regular weekly research seminars in condensed matter, particle, and plasma physics, and astrophysics.

Sources of support available to graduate students include teaching assistantships, research assistantships, and fellowships. Students planning to pursue graduate work in Physics should visit the Department Web site at http://www.physics.uci.edu.

Students admitted into the graduate program in Physics and Astronomy may elect to pursue the M.S. or Ph.D. degree with a concentration in Chemical and Materials Physics, as described in a later section.

MASTER OF SCIENCE IN PHYSICS

The requirements for the M.S. degree are (1) at least three quarters of residence; (2) mastery of graduate course material, which must be demonstrated by passing, with a grade of B or better, a minimum of eight quarter courses including Physics 211, 213A-B, 215A, 223, at least one other course numbered between 200 and 259, and two other courses approved by the graduate advisor, which can include undergraduate upper-division courses in related areas, and (3) either Option A, a research project and written thesis, or, Option B, a comprehensive written examination. Students pursuing Option A typically complete three quarters of research, enrolling in Physics 295 or 296. Students following Option B should take Physics 214A.

(The requirements for the M.S. degree with a concentration in Chemical and Materials Physics differ from these.)

DOCTOR OF PHILOSOPHY IN PHYSICS

The principal requirements for the Ph.D. degree are a minimum of six quarters of residence, passage of a written and an oral examination, and successful completion and defense of a dissertation reporting results of original research. In addition, the Ph.D. candidate must complete certain graduate course requirements. There is no foreign language requirement.

Course Requirements. Students are required to exhibit mastery of the basic sequences—Classical Mechanics, Electromagnetic Theory, Quantum Mechanics, Mathematical Physics, and Statistical Physics. A minimum of 12 quarter courses including 211, 212A, 213A-B, 214A, 215A-B, 223, at least two other courses numbered between 200 and 259, and two other courses approved by the graduate advisor, must be passed with a grade of B or better. Students are strongly encouraged to take Physics 211, 212A, 213A-B, 214A, 215A-B, and 223 in their first year of study. It is expected that students, having selected a research specialty, will ordinarily take the core courses in that subject in their second year of study. Students pursuing research in elementary particle physics ordinarily complete Physics 215C during their first year and Physics 234A-B-C and 235A-B during their second year. Students pursuing research in plasma physics ordinarily complete Physics 239A during their first year and Physics 239B-C-D their second year; Physics 249 is also recommended. Students pursuing research in condensed-matter physics ordinarily take Physics 238A-B-C during their second year; Physics 133 should be taken in the first year by those students who have not had an equivalent course. Students pursuing research in astrophysics/cosmology ordinarily complete Physics 240A during spring of their first year; 240B, C in their second year; and one or more of Physics 241B, C, D in their second or subsequent years. Students interested in medical imaging should take Physics 233 in the second year. Students pursuing research in biological physics should take Physics 230A-B in the second year.

NOTE: The requirements for the Ph.D. degree with a concentration in Chemical and Materials Physics (ChaMP) differ from these and are outlined in a later section.

Comprehensive Examination. Progress toward the degree is assessed by a written comprehensive examination covering a broad range of fundamentals of physics at the graduate and advanced undergraduate levels. It is offered twice a year, and a student is allowed a maximum of three attempts. The first attempt must occur before the end of the fall quarter of the student's second year, and the examination must be passed by the end of spring quarter of the student's second year.

Advancement to Ph.D. Candidacy. For advancement to Ph.D. candidacy, a student must pass an oral advancement examination. It is typically taken within one year of successful completion of the comprehensive examination. To satisfy normative progress toward the degree, it must be taken by the end of the student's third year. The candidacy committee that administers this examination will contain one or two faculty members from outside the Department. This oral examination will cover material principally related to the broad and general features of the student's dissertation area.

Teaching Program. Experience in teaching is an integral part of the graduate program, and all Ph.D. students are required to participate in the teaching program for at least three quarters during their graduate careers. All new teaching assistants are required to enroll in Physics 269 and must pass in order to be allowed to TA in future quarters. Students are required to enroll in Physics 399 while serving as a TA. Lab TAs are required to enroll in Physics 395 as well as 399.

Students who are not citizens from countries where English is either the primary or dominant language as approved by the UCI Graduate Council must pass either the Test of Spoken English (TSE) or the UCI SPEAK (Speaking Proficiency English Assessment Kit) examination. One of these tests must be passed before such a student can qualify for a teaching assistantship in order to fulfill the Department's teaching requirement. The Department expects one of these tests to be passed by the end of the student's second year at UCI.

Dissertation. A dissertation summarizing the results of original research performed by the student under the supervision of a doctoral committee, appointed by the Department Chair on behalf of the Dean of the Graduate Division and the Graduate Council, will be required for the Ph.D. degree. A criterion for the acceptability of a dissertation by the Department is that it be suitable for publication in a scientific journal. The dissertation must not have been submitted to any other institution prior to its submission to the UCI Physics and Astronomy Department.

Defense of Dissertation. Upon completion of the dissertation, the student will take an oral examination, open to the public, before the doctoral committee.

CONCENTRATION IN CHEMICAL AND MATERIALS PHYSICS

This is an interdisciplinary program between condensed matter physics and physical chemistry, which is designed to eliminate the barrier between these two disciplines. Students with B.S. degrees in Physics, Chemistry, or Materials Science and Engineering, are encouraged to apply to the program. The goal of the concentration in Chemical and Materials Physics (ChaMP) is to provide students with a broad interdisciplinary education in the applied physical sciences that emphasizes modern laboratory and computational skills. The program accepts students for both the M.S. and the Ph.D. degrees. Upon admission to the program, students are assigned two faculty advisors, one from the Department of Physics and Astronomy, and one from the Department of Chemistry, to provide guidance on curriculum and career planning.

The curriculum for the M.S. program includes a summer session to assimilate students with different undergraduate backgrounds; formal shop, laboratory, and computational courses; a sequence on current topics to bridge the gap between fundamental principles and applied technology; and a course to develop communication skills. The required courses include thirteen core courses and three electives (subject to advisor approval) as follows: **Core:** Physics 206, 207, 228, 229A, 266; Physics 273 or Chemistry 273; Chemistry 231A or Physics 215A; Chemistry 231B or Physics 215B; Chemistry 231C, 232A-B; one course from each of the following two groups: Physics 211 or 222; Physics 133 or 238A or Chemistry 236. **Electives:** Physics 134, 213C, 223, 229B, 233A, 233B, 238A, 238B, 238C, Chemistry 213, 225, 226, 232C, 233, 243, 248, 249, Engineering EECS285B, MSE259A. In addition to the required courses, M.S. students complete a master's thesis. Students are required to advance to candidacy for the master's degree at least one quarter prior to filing the master's thesis. There is no examination associated with this advancement, but the thesis committee needs to be selected and appropriate forms need to be filed. The M.S. program prepares students to compete for high-tech jobs or to begin research toward a Ph.D. degree.

Successful completion of the M.S. degree requirements qualifies students for the Ph.D. program. Progress toward the Ph.D. degree is assessed by a written comprehensive examination administered in the summer after completion of the first year of study. This examination covers comprehensive knowledge acquired in course work, and the content of the examination depends upon the student's specific area of interest.

Participants in the Ph.D. program take an examination for formal advancement to candidacy. It is typically taken within one year of successful completion of the comprehensive examination. To satisfy normative progress toward the degree, it must be taken by the end of the student's third year. The examination is comprised of two parts: (a) a written report on a topic to be determined in consultation with the research advisor and (b) an oral report on research accomplished and plans for completion of the Ph.D. dissertation.

Courses in Physics

(Schedule of Classes **designation: Physics)**

LOWER-DIVISION

NOTE: The Department of Physics and Astronomy strictly enforces all course prerequisites. Courses with sequential designations (for example, 1A-B-C) indicate multiple-quarter courses; *each course in a sequence is prerequisite to the one following.*

2 Introduction to Mathematical Methods for Physics (4) F. Lecture, two hours; discussion, two hours; tutorial, two hours. Provides the applied mathematics and problem solving/presentation skills necessary for success in an introductory physics sequence. Focuses on practical exercises in problem solving. Additional topics include vectors, graphing functions, trigonometry, differentiation, integration, and approximations. Corequisite: Mathematics 2A. Prerequisite: Mathematics 1B.

3A-B-C Basic Physics (4-4-4) F, W, S, Summer. Lecture, three hours; discussion, one hour. **3A:** Vectors; motion, force, and energy. **3B:** Fluids; heat; electricity and magnetism. **3C:** Waves and sound; optics; quantum ideas; atomic and nuclear physics; relativity. Prerequisite or corequisite: Mathematics 2A-B. **(II)**

3LB Basic Physics Laboratory (1.5) W, S, Summer. Laboratory, three hours. Practical applications of electronics and classical physics to biology. Goals include skill to use oscilloscope and other basic instrumentation. **(IX)**

3LC Basic Physics Laboratory (1.5) S, Summer, F. Laboratory, three hours. Practical applications of physics to medical imaging. Topics include optics, radioactivity, and acoustics. Prerequisite: Physics 3LB. **(IX)**

7A-B Classical Physics (4-4) F, W; W, S. Lecture, three hours; discussion, one hour. **7A:** Units; vectors; motion; force; energy. **7B:** Momentum; thermodynamics; rotation and gravity. Corequisites for 7A-B: corresponding quarters of Physics 7LA-LB; Mathematics 2A-B. Physics 7C may not be taken for credit after Physics 7A or 7B. **(II)**

7C Classical Physics (4) W. Lecture, three hours; discussion, one hour. Topics include force; energy; momentum; rotation and gravity. Corequisites: Physics 7LC, Mathematics 2B. Prerequisites: Mathematics 2A and one of the following: a passing score on the UCI Physics Placement exam, *or* a 4 or better on the Physics AP Exam C, Part I or II, *or* a grade of C or better in Physics 2. Physics 7C may not be taken for credit after Physics 7A or 7B. **(II)**

7D Classical Physics (4) S. Lecture, three hours; discussion, one hour. Electricity and magnetism. Corequisites: Physics 7LD; Mathematics 2D. Prerequisites: Physics 7C or 7B; Mathematics 2B. **(II)**

7LA-LB Classical Physics Laboratory (1-1) F, W; W, S; Summer. Laboratory, two hours. Experiments related to lecture topics in Physics 7A-B. Corequisite: corresponding quarter of Physics 7A-B. Physics 7LA-LB and Physics 7LC may not both be taken for credit. **(IX)**

7LC Classical Physics Laboratory (1) W. Laboratory, two hours. Experiments related to lecture topics in Physics 7C. Corequisite: Physics 7C. Physics 7LC and 7LA-LB may not both be taken for credit. **(IX)**

7LD Classical Physics Laboratory (1) S. Laboratory, two hours. Electricity and magnetism. Corequisite: Physics 7D. **(IX)**

7E Classical Physics (4) F, W, Summer. Lecture, three hours; discussion one hour. Fluids; oscillations; waves; and optics. Prerequisites: Physics 7B or 7C; Mathematics 2B. **(II)**

COURSES FOR NON-MAJORS

Course numbers between 14 and 21 are assigned to courses especially designed for students majoring in programs other than the physical sciences.

14 Physics of Energy and the Environment (4). Lecture, three hours. The physics of society's energy production and consumption, and of their influences on the environment. Topics include fossil and renewable energy resources; nuclear power; prospects for a hydrogen economy; efficient and environmentally benign transportation; efficient home and commercial energy usage. **(II)**

15 Physics of Music (4). Lecture, three hours. Introduces basic physical principles underlying generation and properties of music, including basic properties of sound waves, musical scales and temperament, musical instruments, and acoustics of music halls. No mathematics background required, but high school algebra is recommended. **(II)**

16 Physics of Weapons and Their Control (4). Lecture, three hours. Introduction to physics related to issues of peace and conflict. Topics include: nuclear and non-nuclear weapons, delivery systems, missile defense systems, satellite surveillance systems, technology for homeland security, and arms control. Same as International Studies 16. **(II)**

17 Physics of Athletics (4). Lecture, three hours. Introduces basic physical principles behind motion. Examples are drawn from a range of athletic endeavors (such as ice skating, baseball, diving, and dance). No mathematics background required, but high school algebra is recommended. **(II)**

18 How Things Work (4) S. Lecture, three hours. Survey of the physical basis of modern technology, with an emphasis on electronics and materials. Topics include power generation and distribution, communication (radio, TV, telephone, computers, tape recorders, CD players), imaging (optics, x-rays, MRI), and modern materials (alloys, semiconductors, superconductors, polymers, ceramics, liquid crystals). **(II)**

19 Great Ideas of Physics (4). Lecture, three hours. Introduces nonscience majors to physics, examining important breakthroughs and controversies. *Potential topics: Einstein's Relativity; Heisenberg's Uncertainty Principle;* black holes; extra-dimensions; antimatter. Case studies illustrate the essential nature of scientific review and independent confirmation of results. No *mathematics background required.* **(II)**

20 Physical Science of the Earth and Cosmos. Introduction to the physical environment. The formation, structure, and evolution of the Earth, planets, stars, galaxies, and the universe as a whole.

20A Introduction to Astronomy (4) F, S. History of astronomy. Underlying physics. Objects in the solar system and how they are studied. Properties of stars: their formation, structure, and evolution. Pulsars and black holes. Galaxies and quasars. **(II)**

20B Cosmology: Man's Place in the Universe (4) W. "Cook's Tour" of the universe. Ancient world models. Evidence for universal expansion; the size and age of the universe and how it all began. The long-range future and how to decide the right model. Anthropic principle. **(II)**

20C Observational Astronomy (4). Lecture, three hours; discussion, one hour. Fundamental observational techniques used in astronomy, including the analysis and interpretation of images and spectra that allow students to determine orbits of planets and moon, time evolution of supernovae, ages of star clusters, Hubble's Law. Naked-eye observations of the night sky. Observations of stars and galaxies with the UCI 24-inch telescope. Current events in observational astronomy. Prerequisites: Physics 20A, 20B. **(II)**

20D Space Science (4) S. Motions of planets, satellites, and rockets. Propulsion mechanisms and space flight. The solar radiation field and its influence on planets. The interplanetary medium, solar wind, and solar-terrestrial relations. **(II)**

21 Special Topics in Physics (4). Lecture, three hours. Topics vary. Past topics have included physics and music, Newton, planetary science. Lectures on areas of special interest in physics are used to introduce students to scientific method, fundamental laws of science, qualitative and quantitative analysis of data. May be repeated for credit as topics vary. **(II)**

ADVANCED LOWER-DIVISION

50 Mathematical Methods for Physical Science (4) S. Lecture, three hours; discussion, one hour. Mathematica and its applications to linear algebra, differential equations, and complex functions. Fourier series and Fourier transforms. Other topics in integral transforms. Corequisite: Mathematics 2E. Prerequisites: Mathematics 2J and 3D.

51A-B Modern Physics (4-4) W, S. Lecture, three hours; discussion, one hour. **51A:** Wave-particle duality; quantum mechanics; special relativity; statistical mechanics. Prerequisites: Physics 7E and Mathematics 2D. **51B:** Atoms; molecules; solids, nuclei; elementary particles. Physics 51A-B is for nonmajors only. Corresponding segments of Physics 51A-B and 61A-B may not both be taken for credit.

52A-B-C Fundamentals of Experimental Physics (2-2-2) F, W, S. Laboratory, four hours. **52A:** Optics: lenses, mirrors, polarization, lasers, optical fibers, interference, spectra. Corequisite: Physics 7E. **52B:** Circuits: oscilloscope, meters, DC and AC circuits. Corequisite: Mathematics 2J. Prerequisite: Physics 7D. **52C:** Data analysis: random and systematic errors, curve fitting; nuclear counting; quantum experiments. Prerequisite: Physics 51A or 61A.

53 Introduction to C and Numerical Analysis (4) S. Introduction to structured programming; in-depth training in C. Elementary numerical methods applied to physics problems. Prerequisites: Mathematics 2J and 3D.

61A-B Modern Physics for Majors (4-4) W, S. Lecture, three hours; discussion, one hour. **61A:** Special relativity; wave-particle duality; Schrödinger equation; angular momentum. Prerequisites: Physics 7E and Mathematics 2D. **61B:** Atomic transitions; molecules; statistical physics; solids; nuclei; elementary particles; cosmological models. Corresponding segments of Physics 61A-B and 51A-B may not both be taken for credit.

H90 The Idiom and Practice of Science (4) W. Lecture, three hours; discussion, two hours. A series of fundamental and applied scientific problems of social relevance. Possible topics include Newton's Laws, calculus, earthquake physics, and radiation. Open only to members of the Campuswide Honors Program. **(II)**

99 General Physics Seminar (1) F, W, S. Designed to introduce undergraduate students to current topics in physics. Focus is discussion of selected readings on current research issues. May be repeated for credit.

UPPER-DIVISION

100 Computational Methods (4) F. Lecture, three hours; laboratory, six hours. Mathematical and numerical analysis using Mathematica and C programming, as applied to problems in physical science. Prerequisite: consent of instructor. Concurrent with Physics 229A.

106 Laboratory Skills (4 to 6). Lecture, three hours; laboratory, six to ten hours. Introduces students to a variety of practical laboratory techniques, including lock-in, boxcar, coincidence counting, noise filtering, PID control, properties of common transducers, computer interfacing to instruments, vacuum technology, laboratory safety, basic mechanical design, and shop skills. Prerequisite: consent of instructor. Concurrent with Physics 206 and Chemistry 206.

111A-B Classical Mechanics (4-4) F, W. Lecture, three hours; discussion, one hour. One dimensional motion and oscillations; three-dimensional motion, non-inertial coordinates, conservation laws, and Lagrangian and Hamiltonian dynamics; rigid body motion and relativity. Prerequisites: Physics 7E and 50; Mathematics 2J and 3D.

112A-B Electromagnetic Theory (4-4) W, S. Lecture, three hours; discussion, one hour. Electric, magnetic, and gravitational fields and potentials; electrodynamics; mechanical and electromagnetic waves and radiation. Prerequisites: Physics 7D and 50; Mathematics 2E.

113A-B-C Quantum Physics (4-4-4) S, F, W. Lecture, three hours; discussion, one hour. Inadequacy of classical physics; time independent and time dependent Schrodinger equation; systems in one, two, and three dimensions; matrices; Hermitian operators; symmetries; angular momentum; perturbation theory; scattering theory; applications to atomic structure; emphasis on phenomenology. Prerequisites: Physics 61A, 111B, and 112A.

115A Statistical Physics (4) F. Lecture, three hours. Microscopic theory of temperature, heat, and entropy; kinetic theory; multicomponent systems; quantum statistics. Prerequisite: Physics 61B.

115B Thermodynamics (4) S. Lecture, three hours. Macroscopic theory of temperature, heat, and entropy; mathematical relationships of thermodynamics; heat engines; phase transitions. Prerequisite: Physics 115A.

116 Relativity and Black Holes (4) F. Lecture, three hours; discussion, one hour. Introduces students to both special and general relativity; includes the formalism of four-vectors, equivalence principle, curved space-time, and modern issues with black holes. Prerequisite: Physics 61B.

120 Electronics for Scientists (4) F. Lecture, two hours; laboratory, four hours. Applications of modern semiconductor devices to physical instrumentation. Characteristics of semiconductor devices, integrated circuits, analog and digital circuits. Prerequisite: Physics 52B or consent of instructor. Concurrent with Physics 220.

121 Advanced Laboratory (4) W, S. Lecture, one hour; laboratory, eight hours. Experiments in atomic, condensed matter, nuclear, particle, and plasma physics. Introduction to instrumentation and a first experience in the research laboratory. Prerequisites: Physics 51B or 61B, and 52C. May be taken for credit three times.

125A-B Mathematical Physics (4-4) W, S. Lecture, three hours; discussion, one hour. Complex variables; Legendre and Bessel functions; complete sets of orthogonal functions; partial differential equations; integral equations; calculus of variations; coordinate transformations; special functions and series. Prerequisite: Physics 113A.

CAPSTONE SEMINARS

NOTE: Some of the upper-division courses listed below have one or two hours of discussion weekly in addition to the lectures. Students should refer to the *Schedule of Classes* (available at http://www.reg.uci.edu) for information.

133 Introduction to Condensed Matter Physics (4) S. Lecture, three hours. Phenomena of solids and their interpretation in terms of quantum theory. Prerequisites: Physics 113B and 115A.

134A Physical and Geometrical Optics (4) W. Lecture, three hours; discussion, one hour. Focuses on the practical aspects of optics and optical engineering, starting at the fundamentals. Topics include geometrical optics, ray tracing, polarization optics, interferometers, and diffractive optics. Corequisite: Physics 112B. Prerequisite: Physics 112A. Concurrent with Chemistry 242A.

135 Introduction to Plasma Physics (4) F. Lecture, three hours. Ionization and discharge mechanisms; microscopic motions and kinetic equations; macroscopic fluid theories; electrodynamics of plasma; waves and instabilities; examples of laboratory and cosmic phenomena. Prerequisite: Physics 112B.

136 Introduction to Particle Physics (4) W. Lecture, three hours. Experimental techniques and theoretical concepts of high-energy phenomena: accelerators and detectors; classification of particles and interactions; particle properties; symmetries and mass multiplets; production and decay mechanisms. Prerequisite: Physics 113B.

137 Introduction to Cosmology (4) W. Lecture, three hours; discussion, one hour. Solution of the differential equations governing the expansion of the Universe. Observational determinations of the parameters governing the expansion. Big Bang inflation, primordial nucleosynthesis, and cosmic microwave background. Dark matter, dark energy, and large-scale structure of the Universe. Prerequisites: Physics 111A, Mathematics 3D.

138 Extragalactic Astrophysics (4) W. Lecture, three hours; discussion, one hour. Introduction to the solar neighborhood, Milky Way, and other galaxies. Interstellar medium. Star formation. Stellar populations. Evolution of spiral, elliptical, and irregular galaxies. Supermassive black holes, quasars, and active galaxies. Galaxies as probes of the expansion rate of the Universe. Prerequisites: Physics 111A-B.

139 Observational Astrophysics (4) F. Lecture, one hour; laboratory, eight hours. Telescopes and astronomical observations, imaging with CCD detectors and image processing techniques. Photometry and spectroscopy of stars, galaxies, and quasars. Advanced imaging techniques such as deconvolution, adaptive optics, and interferometry. Prerequisites: Physics 52A-B-C; Physics 53 or equivalent computing experience.

144 Stellar Astrophysics (4) S of odd years. Lecture, three hours. Stars: their structure and evolution; physical state of the interior; the Hertzprung-Russell diagram, stellar classification, and physical principles responsible for the classification; star formation; nuclear burning; giant and dwarf stars; neutron stars and black holes. Prerequisites: Physics 51B or 61B, 111A, and 112A.

145 High-Energy Astrophysics (4) S of even years. Lecture, three hours. Production of radiation by high-energy particles, white dwarfs, neutron stars, and black holes. Evolution of galactic nuclei, radio galaxies, quasars, and pulsars. Cosmic rays and the cosmic background radiation. Prerequisites: Physics 51B or 61B, 111A, and 112A.

146A-B Biophysics of Molecules and Molecular Machines (4-4) F, W. Lecture, three hours. Physical concepts and experimental and computational techniques used to study the structure and function of biological molecules and molecular machines with examples from enzyme action, protein folding, molecular motors, photobiology, chemotaxis, and vision. Prerequisite: Physics 115A or consent of instructor. Concurrent with Physics 230A-B.

147A-B-C The Physics of Medical Imaging. Lecture, three hours.

147A Principles of Imaging (4) F. Linear systems, probability and random processes, image processing, projection imaging, tomographic imaging. Prerequisite: Physics 51B or 61B or equivalent. Concurrent with Physics 233A and Engineering EECS202A.

147B Techniques in Medical Imaging I: X-ray, Nuclear, and NMR Imaging (4) W. Ionizing radiation, planar and tomographic radiographic and nuclear imaging, magnetism, NMR, MRI imaging. Prerequisite: Physics 147A. Concurrent with Physics 233B and Engineering EECS202B.

147C Techniques in Medical Imaging II: Ultrasound, Electrophysiological, Optical (4) S. Sound and ultrasound, ultrasonic imaging, physiological electromagnetism, EEG, MEG, ECG, MCG, optical properties of tissues, fluorescence and bioluminescence, MR impedance imaging, MR spectroscopy, electron spin resonance and ESR imaging. Prerequisite: Physics 147B. Concurrent with Physics 233C and Engineering EECS202C.

150 Special Topics in Physics and Astronomy (4) F, W, S. Lecture, three hours; discussion, one hour. Current topics in physics. Includes topics from nano-science, biological sciences, astrophysics, and the common use of estimation across subdisciplines within physics. May be repeated for credit as topics vary.

EDUCATION

191 Field Experience in Physics Education (1 to 4) F, W, S. Students develop and perform physics assemblies at neighboring public schools. Prerequisites: Physics 7B-D-E or equivalent. Pass/Not Pass only. May be taken for a total of eight units.

192 Tutoring in Physics (1 to 2). Enrollment limited to students participating in the Society of Physics Students (SPS) tutoring program. This course satisfies no requirements other than contribution to the 180 units required for graduation. No more than 12 units may be counted toward the 180 units required. Prerequisite: Physics 7E or consent of instructor.

193 Research Methods (4) W, S. Lecture, three hours; laboratory, two hours. Explores tools of inquiry for developing and implementing science research projects. Students undertake independent projects requiring data collection, analysis, and modeling, and the organization and presentation of results. Additional topics include ethical issues and role of scientific literature. Prerequisite: Biological Sciences 14 or Physical Sciences 5. Same as Chemistry 193 and Biological Sciences 108.

RESEARCH

195 Undergraduate Research (4). Open to seniors and occasionally to juniors with consent of the Department. Pass/Not Pass Only.

196A-B-C Thesis in Physics (4-4-4) F, W, S. Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Prerequisites: Physics 113A and consent of instructor; prerequisite for 196C: satisfactory completion of the lower-division writing requirement. Physics 196A-B-C and H196A-B-C may not both be taken for credit. Physics 196C and 197 may not both be taken for credit.

H196A-B-C Honors Thesis in Physics (4-4-4) F, W, S. Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Prerequisite for H196C: satisfactory completion of the lower-division writing requirement. Open only to participants in the Honors Program in Physics and to Physics majors participating in the Campuswide Honors Program. Physics H196A-B-C and 196A-B-C may not both be taken for credit. Physics H196C and 197 may not both be taken for credit.

197 Research Writing for Physics Majors (4) S. Students perform a research project under the guidance of a faculty member. Written and oral proposals, a progress report, and written and oral final reports are completed. Prerequisites: Physics 111A-B, 112A-B, 113A, 115A, and satisfactory completion of the lower-division writing requirement. Only one course from Physics 197, 196C, and H196C may be taken for credit.

199 Readings on Special Topics (1 to 4). Prerequisite: consent of the Department. Pass/Not Pass Only. May be repeated for credit.

GRADUATE

206 Laboratory Skills (4 to 6) S, Summer. *Lecture, three hours; laboratory,* six to ten hours. Introduces students to a variety of practical laboratory techniques, including lock-in, boxcar, coincidence counting, noise filtering, PID control, properties of common transducers, computer interfacing to instruments, vacuum technology, laboratory safety, basic mechanical design, and shop skills. Prerequisite: consent of instructor. Same as Chemistry 206. Concurrent with Physics 106.

207 Chemistry for Physicists (4). Lecture, three hours; discussion, one hour. Introduction to fundamental concepts in molecular structure and reactivity: theory of bonding, valence and molecular orbitals; structure and reactivity in inorganic chemistry; elements in molecular group theory; nomenclature in organic chemistry; and survey of macromolecules. Same as Chemistry 207.

208 Mathematics for Chemists (4). Lecture, three hours; discussion, one hour. Applications of mathematics to physical and chemical problems. Calculus of special functions, complex variables and vectors; linear vector spaces and eigenvalue problems. Differential equations. Same as Chemistry 208.

211 Classical Mechanics (4) F. Lecture, three hours. Variational principles, Lagrange's equations; applications to two body problems, small oscillation theory, and other phenomena. Hamilton's equations. Hamilton-Jacobi theory. Canonical transformations.

212A-B Mathematical Physics (4-4) F, S. Lecture, three hours. **212A:** Complex variables and integration; ordinary and partial differential equations; the eigenvalue problem. **212B:** Integral transforms; integral equations; probability and statistics; tensor analysis.

213A-B Electromagnetic Theory (4-4) W, S. Lecture, three hours. Electrostatics; magnetostatics; relativity; classical electron theory; fields in vacuum and matter; retardation; radiation and absorption; dispersion; propagation of light; diffraction; geometric optics; theories of the electric and magnetic properties of materials; scattering.

213C Modern Optics (4). Lecture, three hours. Modern optics, linear and non-linear. Waves in dispersive media, weak non-linearities, higher order interactions, light scattering, strong non-linearities, laser radiation. Prerequisites: Physics 213A-B.

214A-B Statistical Physics (4-4) F, W. Lecture, three hours. **214A:** Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac statistics; ideal and imperfect gases; thermodynamic properties of solids; transport theory. **214B:** Phase transitions; critical phenomena; cooperative phenomena; fluctuations.

214C Many Body Theory (4). Application of field theory methods, perturbative and non-perturbative, to many particle systems; second quantization, Feynman diagrams, linear response theory, and functional integral methods applied to the ground state and at finite temperature. Prerequisites: Physics 214A and 215A-B.

215A-B-C Quantum Mechanics (4-4-4) F, W, S. Lecture, three hours. **215A:** Foundations; Dirac notation; basic operators and their eigenstates; perturbation theory; spin. **215B:** Atomic physics; scattering theory, formal collision theory; semi-classical radiation theory; many body systems. **215C:** Quantization of the electromagnetic field; relativistic quantum mechanics; second quantization.

220 Electronics for Scientists (4) F. Lecture, two hours; laboratory, four hours. Applications of modern semiconductor devices to physical instrumentation. Characteristics of semiconductor devices, integrated circuits, analog and digital circuits. Prerequisite: graduate standing. Concurrent with Physics 120.

222 Continuum Mechanics (4) F. Introduction to the continuum limit and stress and strain tensors. Hydrodynamics of perfect fluids; two-dimensional problems, motion of incompressible viscous fluids, Navier-Stokes equations. Basic elasticity theory. Description of viscoelastic materials. Introduction to nonlinear behavior instabilities.

223 Numerical Methods (4) S. Lecture, three hours; laboratory, one hour. Introduction to theory and practice of modern numerical methods. Techniques are drawn from topics such as solution of differential equations, Monte Carlo methods, Fast Fourier transforms, and evaluation of special functions.

228 Electromagnetism (4) W. Lecture, three hours; discussion, one hour. Maxwell's equations, electrodynamics, electromagnetic waves and radiation, wave propagation in media, interference and quantum optics, coherent and incoherent radiation, with practical applications in interferometry, lasers, waveguides, and optical instrumentation. Prerequisite: consent of instructor. Same as Chemistry 228.

229A-B Computational Methods (4-4). Lecture, three hours; laboratory, six hours. Mathematical and numerical analysis using Mathematica and C programming, as applied to problems in physical science. Prerequisite: consent of instructor. Same as Chemistry 229A-B. Physics 229A is concurrent with Physics 100.

230A-B Biophysics of Molecules and Molecular Machines (4-4) F, W. Lecture, three hours. Physical concepts and experimental and computational techniques used to study the structure and function of biological molecules and molecular machines with examples from enzyme action, protein folding, molecular motors, photobiology, chemotaxis, and vision. Concurrent with Physics 146A-B.

231 Special Topics in Computational Physics (4). Lecture, three hours. Modern symbolic and numerical techniques on state-of-the-art computers for solving problems in classical and quantum mechanics, fluids, electromagnetism, and mathematical physics. May be repeated for credit as topic varies.

233A-B-C The Physics of Medical Imaging. Lecture, three hours.

233A Principles of Imaging (4) F. Linear systems, probability and random processes, image processing, projection imaging, tomographic imaging. Prerequisite: Physics 51B or 61B or equivalent. Same as Engineering EECS202A. Concurrent with Physics 147A.

233B Techniques in Medical Imaging I: X-ray, Nuclear, and NMR Imaging (4) W. Ionizing radiation, planar and tomographic radiographic and nuclear imaging, magnetism, NMR, MRI imaging. Prerequisite: Physics 233A. Same as Engineering EECS202B. Concurrent with Physics 147B.

233C Techniques in Medical Imaging II: Ultrasound, Electrophysiological, Optical (4) S. Sound and ultrasound, ultrasonic imaging, physiological electromagnetism, EEG, MEG, ECG, MCG, optical properties of tissues, fluorescence and bioluminescence, MR impedance imaging, MR spectroscopy, electron spin resonance and ESR imaging. Prerequisite: Physics 233B. Same as Engineering EECS202C. Concurrent with Physics 147C.

234A Elementary Particle Physics (4) F. Lecture, three hours. Overview of Standard Model theory and phenomenology. Electromagnetic, strong and weak forces, quark model, interactions with matter, particle detectors and accelerators. Prerequisite: Physics 215C or consent of instructor.

234B-C Advanced Elementary Particle Physics (4-4) W, S. Lecture, three hours. SU(3)xSU(2)xU(1) model of strong, weak, and electromagnetic interactions. K-meson system and CP violation, neutrino masses and mixing, grand-unified theories, supersymmetry, introduction to cosmology and its connection to particle physics. Prerequisites: Physics 234A and 235A.

235A Quantum Field Theory (4) F. Lecture, three hours. Canonical quantization, scalar field theory, Feynman diagrams, tree-level quantum electrodynamics. Prerequisites: Physics 215C and completion of first-year graduate courses.

235B Advanced Quantum Field Theory (4) W. Lecture, three hours. Path-integral techniques, loop diagrams, regularization and renormalization, anomalies. Prerequisites: Physics 235A and completion of first-year graduate courses.

238A-B-C Condensed Matter Physics (4-4-4) F, W, S. Lecture, three hours. Bonding in solids; crystal symmetry and group theory, elastic properties of crystals; lattice vibrations, interaction of radiation with matter; cohesion of solids; the electron gas; electron energy bands in solids; ferromagnetism; transport theory; semiconductors and superconductors; many-body perturbation theory. Prerequisites: Physics 133 and Physics 214A or Chemistry 232A; Physics 215B or Chemistry 231B; consent of instructor.

239A-B-C-D Plasma Physics (4-4-4-4) S, F, W, S. Lecture, three hours. **239A:** Basic concepts, orbits, kinetic and fluid equations, Coulomb collisions, fluctuations, scattering, radiation. **239B:** Magnetic confinement, MHD equilibrium and stability, collisional transport. **239C:** Linear waves and instabilities, uniform un-magnetized and magnetized plasmas, non-uniform plasmas. **239D:** Nonlinear plasma physics, quasilinear theory, large-amplitude coherent waves, resonance broadening, strong turbulence.

240A Galactic Astrophysics (4) S. Lecture, three hours. The morphology, kinematics, and evolution of our Milky Way and other galaxies. Topics include stellar formation and stellar evolution, end states of stars (supernovae, neutron stars), the distribution of stars, interstellar gas and mass in galaxies. The Local Group.

240B Cosmology (4) F. Lecture, three hours. An introduction to modern cosmology set within the context of general relativity. Topics include the expansion history of the Universe, inflation, the cosmic microwave background, density fluctuations, structure formation, dark matter, dark energy, and gravitational lensing.

240C Radiative Processes in Astrophysics (4) W. Lecture, three hours. Exploration of radiation mechanisms (electron scattering, synchrotron emission, collisional excitation, and more) and radiative transfer through matter including absorption and emission. Includes such observational astrophysics topics as spectroscopic study of atoms and nuclei, X-rays, and cosmic rays.

241B Stellar Astrophysics (4) W. Lecture, three hours. Physics of stellar interiors and equations of stellar structure. Stellar atmospheres and absorption processes. Introduction to stellar winds. Thermonuclear reactions, nucleosynthesis, and solar neutrinos. Binary stars and mass accretion. White dwarfs, supernovae, neutron stars, and black holes. Prerequisites: Physics 211, 240A.

241C Extragalactic Astrophysics (4) W. Lecture, three hours. The physics and phenomenology of galaxies; star formation, interstellar medium, and intergalactic medium. Galaxy structure and dynamics. Galaxy evolution, stellar populations, and scaling relations; the relationship between galaxy properties and environment. Galaxy clusters and active galactic nuclei. Prerequisites: Physics 211, 240A.

241D Early Universe Physics (4) S. Lecture, three hours. Includes a thorough quantum treatment of the generation of perturbations during inflation and various topics related to kinetic theory in an expanding Universe. Other topics include the astrophysics and cosmology of weakly interacting particles. Prerequisites: Physics 234A, and either 240B or 255.

246 Special Topics in Astrophysics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of astrophysics that is undergoing rapid development. Prerequisites: Physics 236A-B-C or consent of instructor. May be repeated for credit.

247 Special Topics in Particle Physics (4) F, W, S. Lecture, three hours. Current topics in particle non-accelerator-based research fields. May be repeated for credit.

248 Special Topics in Condensed Matter Physics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of condensed matter physics that is undergoing rapid development. May be repeated for credit.

249 Special Topics in Plasma Physics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of plasma physics that is undergoing rapid development. Satisfactory/Unsatisfactory only. Prerequisites: Physics 239A-B. May be repeated for credit.

255 General Relativity (4). Lecture, three hours. An introduction to Einstein's theory of gravitation. Tensor analysis, Einstein's field equations, astronomical tests of Einstein's theory, gravitational waves.

260-299: SEMINARS AND RESEARCH

These courses are designed to acquaint students with the basic concepts and methods underlying current research activity in selected branches of physics.

260A-B-C Seminar in Condensed Matter Physics (1-1-1) F, W, S. Seminar designed to acquaint students with recent advances in solid state physics. Lecturers from the Department of Physics and Astronomy (both faculty and graduate students), other UCI departments, and other institutions. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

261A-B-C Seminar in Plasma Physics (1-1-1) F, W, S. Advanced topics in plasma physics: wave propagation, nonlinear effects, kinetic theory and turbulence, stability problems, transport coefficients, containment, and diagnostics. Applications to controlled fusion and astrophysics. Satisfactory/Unsatisfactory only. Prerequisites: Physics 239A-B-C-D or equivalent.

263A-B-C Seminar in Particle Physics (1-1-1) F, W, S. Discussion of advanced topics and reports of current research results in theoretical and experimental particle physics and cosmic rays. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

265A-B-C Seminar in Astrophysics (1-1-1) F, W, S. Acquaints students with current research in astrophysics. Lecturers from the Department of Physics and Astronomy and from other institutions. Satisfactory/Unsatisfactory only. May be repeated for credit.

266 Current Topics in Chemical and Materials Physics (1). Lecture, one hour; discussion, one hour. The subjects covered vary from year to year. Connection between fundamental principles and implementations in practice in science, industry, and technology. Prerequisite: consent of instructor. Same as Chemistry 266.

267A-B-C Current Problems in Particle Physics (4-4-4) F, W, S. Lecture, three hours. Presentation and discussion of current research and theory in particle physics. Lectures given by staff and students. May be repeated for credit.

269 Seminar in Teaching Physics (2) F. Techniques for effective teaching. Covers active listening and student engagement, problem-solving skills, peer instruction and collaborative learning, and evaluation. Required of all new Teaching Assistants. Satisfactory/Unsatisfactory only.

273 Technical Communication Skills (2). Lecture, one hour; discussion, three hours. Development of effective communication skills, oral and written presentations, through examples and practice. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. Same as Chemistry 273.

291 Research Seminar (1 to 4) F, W, S. Detailed discussion of research problems of current interest in the Department. Format, content, and frequency of the course are variable. Prerequisites: graduate standing and consent of instructor. May be repeated for credit as topics vary.

295 Experimental Research (4 to 12). With the approval of a faculty member, a student may pursue a research program in experimental physics. Typical areas include astrophysics, condensed matter physics, elementary particle physics, and plasma physics.

296 Theoretical Research (4 to 12). With approval of a faculty member, a student may pursue a research program in theoretical physics. Typical areas include astrophysics, condensed matter physics, elementary particle physics, and plasma physics.

298 Physics Colloquium (1). Seminar held each week, in which a current research topic is explored. Frequently, off-campus researchers are invited to present the seminar, and on occasion a faculty member or researcher from the Department will speak. Satisfactory/Unsatisfactory only. May be repeated for credit.

299 Reading of Special Topic (4 to 12). With special consent from a faculty member who will agree to supervise the program, a student may receive course credit for individual study of some area of physics.

395 Laboratory Teaching (1) F, W, S, Summer. Lecture, two hours. Required of and limited to teaching assistants of undergraduate laboratory courses. Designed to teach the necessary skills required of teaching assistants for these courses. Satisfactory/Unsatisfactory only. May be repeated for credit.

399 University Teaching (1 to 4) F, W, S. Required of and limited to Teaching Assistants.

SCHOOL OF SOCIAL ECOLOGY

Valerie Jenness, **Interim Dean**

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OVERVIEW

The School of Social Ecology is an interdisciplinary academic unit committed to scholarly research and instruction that is informed by and contributes to knowledge in the social, behavioral, legal, and health sciences. It promotes discipline and boundary-crossing research and teaching that is inspired by pressing social problems and directed toward the betterment of society through the pursuit of theory development, the creation of empirically derived knowledge, the practical application of scholarly knowledge, and civic engagement.

The School is comprised of three departments: Criminology, Law and Society; Planning, Policy, and Design; and Psychology and Social Behavior; offers four undergraduate and seven graduate degrees; and currently has about 2,160 undergraduate majors, 290 graduate students, 66 faculty, and more than 13,000 alumni.

Social Ecology faculty apply scientific methods to the study of a wide array of recurring social, behavioral, and environmental problems and specialize in conducting research "with considerations of use" in society. Among issues of long-standing interest in the School are crime and justice in society, social influences on human development over the life cycle, and the effects of the physical environment on health and human behavior. While the field of ecology focuses on the relationships between organisms and their environments, social ecology is concerned with the relationships between human populations and their environments.

Social Ecology's faculty is multidisciplinary, including psychologists with a variety of specialties (e.g., developmental, social, clinical, and health psychology); criminologists; sociologists; anthropologists; political scientists; lawyers; urban and regional planners and economists; and program evaluation experts. The School's research and teaching is distinguished by an emphasis on the integration of the concepts and perspectives of these multiple disciplines. This focus is based on the School's core belief that the analysis and amelioration of complex societal problems requires interdisciplinary efforts.

Many Social Ecology faculty are involved in developing policies and interventions directed toward improving the functioning of individuals, families and other groups, organizations, institutions, and communities. Social Ecology undergraduate students benefit from the multidisciplinary instructional expertise of the School's faculty in the classroom and are afforded opportunities to engage in field-based and laboratory-based learning, as well, through the School's well-established and highly regarded field studies program and its laboratories.

Graduate students work closely with the faculty in the classroom and in laboratories, as well as collaborating on important research projects that enhance their research skills while advancing knowledge and addressing important societal problems.

Research Facilities

Social Ecology I and II and the nearby Social and Behavioral Sciences Building are wireless environments that house the School's research centers and feature many facilities for experimental research, such as behavioral assessment laboratories for research in human development, social relations, and legal studies. Behavioral assessment laboratories are used for studying social phenomena such as parent-child interaction, cooperation among children, memory functions, hyperactivity, social support processes, and mock jury discussions.

The School also offers students up-to-date computing facilities, including the state-of-the art Janice R. Green Instructional Computing Lab, and assistance to ensure that their skills prepare them for either advanced (graduate) work or for the changing needs of today's workplace, which increasingly demands skills in computing and information technology.

Degrees

Criminology, Law and Society ..... B.A., M.A.S., Ph.D.
Planning, Policy, and Design ..... Ph.D.
Psychology and Social Behavior ..... B.A., Ph.D.
Social Ecology ..... B.A., M.A., Ph.D.
Urban and Regional Planning ..... M.U.R.P.
Urban Studies ..... B.A.

HONORS

Honors at graduation will be awarded to about 12 percent of the graduating seniors. Eligibility for such honors will be on the basis of grade point average (GPA). A minimum overall GPA of 3.5 is required. A general criterion is that students must have completed at least 72 units in residence at a University of California campus by the end of the final quarter prior to graduation. Final decisions concerning the awards of *summa cum laude*, *magna cum laude*, and *cum laude* are the responsibility of a committee chaired by the Associate Dean for Students. For more information about honors criteria contact the Social Ecology Student Services Office at (949) 824-6861 or visit the Social Ecology Web site. Other important factors are also considered (see page 52).

Undergraduate Program

The School of Social Ecology offers either a general interdisciplinary degree in Social Ecology or a more focused experience through degree programs in Criminology, Law and Society; Psychology and Social Behavior; and Urban Studies.

Change of Major. Students who wish to change their major to one offered by the School should contact the Social Ecology Student Services Office for information about change-of-major requirements, procedures, and policies. Information is also available at http://www.changeofmajor.uci.edu.

HONORS PROGRAM IN SOCIAL ECOLOGY

The Social Ecology Honors Program provides the opportunity for selected School of Social Ecology students to pursue advanced independent study. Admission to the program is based on formal invitation and an application submitted by the prospective student in the spring quarter of his or her junior year. In order to be considered, a student must have satisfied the following requirements: completion of all lower-division Social Ecology courses required for the major; completion of at least five upper-division Social Ecology courses with a grade point average of at least 3.5 in these courses; and achievement of an overall grade point average at UCI of at least 3.2. Acceptance into the program is based upon evidence of the student's ability, interest in research, and proposed thesis project. Successful completion of the program requires three quarters, including supervised independent work on a thesis research project (Social Ecology H190A-B) and written and oral presentation of an honors thesis (Social Ecology H190W).

CAREER OPPORTUNITIES

Graduates of the School of Social Ecology bring a distinctive cross-disciplinary perspective to the job market. The School provides a solid foundation for those students who seek jobs in planning departments, mental health settings, educational institutions, and a variety of community and governmental agencies, including, for example, criminal justice agencies. Many Social Ecology students find that their interdisciplinary training is also useful for careers in public management, law, and business.

The School also provides useful preparation for students who wish to apply to graduate and professional schools of law, public policy/public administration, public health, social welfare, psychology, sociology, criminology, and urban planning.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. Additional information is available in the Career Center section.

FIELD STUDY

An important aspect of the undergraduate program is its field study requirement for majors. Field study is designed to provide students with an opportunity to examine individual, interpersonal, and social-environmental problems as they occur in community settings; to evaluate the merit of ideas presented in the classroom; and to conduct naturalistic observations and investigations at field sites.

Under the supervision of a Social Ecology faculty sponsor, students have the opportunity to test their skills in the community, to evaluate procedures and problem-solving strategies used in the work place, and to observe the links between community practices and academic ideas and issues. The settings provided for field study include a wide range of problem-oriented institutions and agencies in both the private and the public sector (e.g., Orange County Public Defender's Office; California Coastal Commission; American Red Cross; primary and secondary schools; Fairview Development Center; planning, legal, and design corporations). Students must select a placement site from those listed and approved by the School of Social Ecology. Unlisted or inappropriate placements, as well as those that could give the appearance of nepotism or preferential treatment, will not be approved. Departmental approval for field study will be determined by the Field Study Director.

Field study is open *only* to upper-division School of Social Ecology students who are in good academic standing and have completed all prerequisite course work. All field studies are taken on a Pass/Not Pass grading basis. Further information, including field study sign-up procedures and prerequisites, must be obtained from the Social Ecology Student Services Office.

Planning a Program of Study

Because there are many alternative ways to plan a program, some of which may require careful attention to specific major requirements, students should consult with the Social Ecology Student Services Office, 102 Social Ecology I, to design an appropriate program of study.

Students who elect one of the majors in the School of Social Ecology in their freshman year might begin by taking the introductory courses required by their major. It is a good idea to take these courses early because they include fundamental concepts that are widely applicable in more advanced courses. In addition, the lower-division writing requirement of the general education requirement (category I) should be completed during the first year. In the sophomore year, the student might complete three courses toward the general education requirement, four courses in their major, and four electives. Students who are planning to go on to graduate school can use their freshman and sophomore years to advantage by taking courses in theory, research methods, statistics, and other areas important to graduate study. In the junior and senior years, the student should take courses in the major area and should create an individualized program of study through a combination of courses and course modules which fall in an area of interest. Particular attention should be paid to planning a program of study that will ensure that major requirements are met prior to graduation.

Requirements for the Bachelor's Degree

University Requirements: See pages 55–62.

School Requirements

The following School requirements apply to all Social Ecology majors except Psychology and Social Behavior: Criminology, Law and Society C7, Environmental Analysis and Design E8, Psychology and Social Behavior 9 or 11A, B, C, Social Ecology 10, 13, 194, 195 (four units), and one additional upper-division course (four units) chosen from any department in the School of Social Ecology *or* an additional four units of Social Ecology 195. (Social Ecology 198 and 199 may not be used to fulfill this requirement.) NOTE: Beginning 2007–08, students majoring in Psychology and Social Behavior are required to take Psychology and Social Behavior 11A, B, C as a departmental requirement, in lieu of E8, Psychology and Social Behavior 9, and the additional upper-division course.

The following School requirements apply to Psychology and Social Behavior majors: Social Ecology 10, 13, Criminology, Law and Society C7, Social Ecology 194, 195 (four units).

Departmental Requirements: Refer to individual departments.

Grade Requirement

A minimum grade average of at least C (2.0) is required (1) overall, (2) in all courses required for the major program, including the School requirements, and (3) in the upper-division courses required for the major.

Double Majors

In order to double major within the School of Social Ecology, major requirements must be met for both majors without any overlap of upper-division courses.

Additional Curricular Options

Students in the School of Social Ecology may combine their course work with the following University programs and should consult an academic counselor for further information.

CAMPUSWIDE HONORS PROGRAM

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

EDUCATION

Students who plan to obtain a teaching credential or a higher degree in the field of education should consult with counselors in the UCI Department of Education early in their college career. Students completing a degree program in the School of Social Ecology may qualify for a waiver of the Single Subject Credential Examination. For additional information about teaching credentials, refer to the Department of Education section.

EDUCATION ABROAD PROGRAM

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges in countries throughout the world. Additional information is available in the Center for International Education section.

INTERDISCIPLINARY MINORS

These minors are available to all UCI students. Information is available in other sections of the *Catalogue,* as noted.

The **minor in Civic and Community Engagement** seeks to provide students with the knowledge, skills, attitudes, and values to engage as citizens and active community members in the twenty-first century. The minor is distinguished both by *what* students learn, and by *how* they learn it. See the Interdisciplinary Studies section for information.

The **minor in Conflict Resolution** provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels. See the School of Social Sciences section for information.

The **minor in Global Sustainability** trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section for information.

The **minor in Native American Studies** is an interdisciplinary, interschool program which focuses on history, culture, religion, and the environment. See the Interdisciplinary Studies section for information.

Undergraduate Major in Social Ecology

REQUIREMENTS FOR THE B.A. DEGREE IN SOCIAL ECOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 426.

Requirements for the Major

Ten upper-division courses (numbered 100–193), selected from Social Ecology and from the Departments of Criminology, Law and Society; Environmental Health, Science, and Policy; Planning, Policy, and Design; and Psychology and Social Behavior.

Course prerequisites established by the individual departments must be satisfied. Students may, by petition, count Social Ecology 199 and graduate courses (numbered 200–290) toward the upper-division requirement.

Courses in Social Ecology

***(Schedule of Classes* designation: SocEcol)**

LOWER-DIVISION

10 Research Design (4). Lecture, three hours. An introduction to the logic behind and methods of designing and conducting research studies in Social Ecology. Topics include how to measure variables of interest, identifying causal relationships, sampling, survey research methods, experiments, quasi-experimental designs, and ethics in research.

13 Statistical Analysis in Social Ecology (4). Lecture, three hours. Introduction to the techniques of statistical analysis in Social Ecology. Topics include probability, statistical inference, significance testing, univariate descriptive statistics, and multivariate analysis from an interdisciplinary perspective. Prerequisite: Social Ecology 10; may be taken concurrently. Restricted to majors only. No credit for Social Ecology 13 if taken after Social Science 9A, Social Science 10A, Anthropology 10A, Political Science 10A-B-C, Psychology 10A, or Sociology 10A.

H20A-B-C Honors: Critical Issues in the Social Sciences (6-6-6). Lecture, three hours; seminar, two hours. Major themes, methods, and works in the social sciences from an interdisciplinary perspective. Each quarter focuses on a different topic. Weekly small seminars emphasizing the development of the skills of critical thinking and quantitative analysis through regular written work are integral to the course. Prerequisite: restricted to members of the Campuswide Honors Program. Same as Social Sciences H1E-F-G. **(III)**

74A-B-C Moral Development and Just Communities (4-4-4). Lecture, three hours. A three-quarter sequence exploring interpersonal, personal, and social issues based on principles of fairness and justice. Both the living environment of a University residence hall and selected institutions of society are analyzed in terms of moral development theory. Prerequisite: consent of instructor. Pass/Not Pass only.

UPPER-DIVISION

111 Advanced Research Methods (4). Lecture, three hours. For students planning to conduct senior research projects or apply to graduate school in social research fields. Topics include reviewing literature, preparing a research proposal, protecting human subjects, citing scholarly work, selecting or building measures, estimating sample size, interview and presentation skills. Prerequisites: Social Ecology 10 and 13 or equivalent.

131 Social Ecology of Health Promotion (4). Lecture, three hours. Core themes of Social Ecology are examined as they apply to major areas of health promotion research and practice. Students attend lectures and work collaboratively on team projects conducted in university and community settings. Prerequisite: consent of instructor. Same as Public Health 143.

150 Social Ecology of Technology (4). Lecture, three hours. Socio-ecological principles applied to technological change and innovation. Technological change as a result of interrelations between people and their socioeconomic environment. Organizational ecology of technology; life cycle concepts and history. Social ecology of technocapitalism and its networks. Prerequisites: Social Ecology 10 and 13 or equivalent.

181 Mentors in Higher Education (4). Seminar, three hours. Discussion of roles and functions of mentors in higher education. Specific mentoring issues include: personal skills, training, the sociocultural role of mentoring in higher education, student affirmative action, history and politics in higher education. Prerequisite: consent of instructor.

183A International Studies Forum (2). Lecture, 1.5 hours; discussion, .5 hours. A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to international studies. May be taken for credit four times. Same as International Studies 183A, Humanities 183A, and Social Science 183A.

183B Senior Seminar in Mediation (4). Seminar, three hours. Students develop mediation skills and refine knowledge in the practice and theory of conflict resolution. Students who complete this course may serve as mediators in the Campus Mediation Program. Course is a prerequisite to completing Independent Study as an intern practicing mediation with the OC Human Relations Commission in small claims court. Prerequisite: upper-division standing. Same as Humanities 183B and Social Science 183B.

183C Senior Seminar in Conflict Resolution (4). Seminar, three hours. Continuation of Social Ecology 183B. Students write a senior research paper. Prerequisite: Social Ecology 183B and satisfactory completion of the lower-division writing requirement. Same as Humanities 183C and Social Science 183C.

186A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Seminar, two hours. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 186A-B, grade for sequence given upon completion of 186C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 191A-B and Earth System Science 190A-B.

186C Writing/Senior Seminar on Global Sustainability III (4) S. Seminar, four hours. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Social Ecology 186A-B and satisfaction of the lower-division writing requirement. Same as Biological Sciences 191C and Earth System Science 190C.

H190A-B Honors Research (4-4). Seminar, three hours. Independent work on an individual research project in addition to participation in a mini proseminar in which faculty discuss their ongoing research. Students prepare a written proposal for a research project. **H190A:** Letter grade and Pass/Not Pass. **H190B:** Pass/Not Pass only. Prerequisites: acceptance into the Honors Program; junior or senior standing.

H190W Honors Seminar and Thesis (4). Seminar, three hours. Students write up their honors research project (H190A-B) and prepare an oral report which is presented at the honors seminar. Prerequisites: acceptance into the honors program; junior or senior standing.

194 Naturalistic Field Research (4). Lecture, three hours. Introduction to alternative models of experiential learning and to various methods of observation, assessment, and evaluation. Introduction to the nature of organizations and ethical issues that emerge from research and intervention in natural settings. Must be taken prior to Social Ecology 195. Enrollment in discussion section is required. Prerequisite: Social Ecology 10; satisfactory completion of the lower-division writing requirement; restricted to Social Ecology majors.

195 Field Study (2 to 8) F, W, S. Naturalistic observation and analysis of social issues and problems in combination with experiential learning in field placement sites in the areas of psychology and social services, criminology, and environmental studies. Prerequisites: Social Ecology 194; junior standing; restricted to Social Ecology majors. Pass/Not Pass only. May be taken for a total of 24 units. **(IX)**

198 Directed Studies (1 to 4) F, W, S. Prerequisite: consent of instructor. Pass/Not Pass only. May be repeated for credit.

199 Special Studies (1 to 4) F, W, S. Prerequisites: consent of instructor and junior or senior status. May be repeated for credit.

Courses in Environmental Analysis and Design*

(Schedule of Classes **designation: Environ)**

E8 Introduction to Environmental Analysis and Design (4) F, W, S. Lecture, three hours. Overview of general concepts, theoretical principles, and analytical techniques for investigating environmental systems. Integrates tools from both natural and social sciences to analyze contemporary environmental challenges such as pollution, resource acquisition, facility and ecosystem design, impact assessments, the formulation of environmental policy. **(III)**

E113 Social Ecology of Peace (4). Lecture, three hours. Examination of differing definitions of the problem of achieving peace and the special problems of seeking peace in the nuclear age. Same as International Studies 121. **(VIII)**

E127 Nuclear Environments (4). Lecture, three hours. Understanding the impact of the nuclear age on the environment and human health through the interrelated developments of nuclear power and nuclear weapons. The early years of weapon development, catastrophic environmental pollution, perils of nuclear power in the U.S. and Russia. Same as International Studies 122 and Public Health 168. **(VIII)**

E191A Seminar in Environmental Health, Science, and Policy (4). Seminar, four hours. Current topics relevant to the field of environmental health, science, and policy are covered in-depth in a seminar format. Possible subjects include hazardous and biological pollutants in soil, water, air; remediation technologies; water conflicts; regulations pertaining to contaminants. Prerequisite: upper-division standing or consent of instructor. May be taken twice for credit as topics vary.

DEPARTMENT OF CRIMINOLOGY, LAW AND SOCIETY

2340 Social Ecology II: (949) 824-5575
Simon A. Cole, **Department Chair**

Faculty

Arnold Binder: Research methodology, juvenile delinquency, police organization and methods
Kitty C. Calavita: Sociology of law, criminology, social deviance, immigration, and inequality
Simon A. Cole: Science, technology, law, and criminal justice
Susan Bibler Coutin: Anthropology of law, law and society, immigration, political activism, human rights, Central America
Elliott Currie: Crime and public policy, causes of crime, juvenile delinquency, drug abuse, race and crime, poverty and social policy
John D. Dombrink: Crime and criminal justice, deviance and social control
Gilbert L. Geis: Crime and criminal justice
Michael R. Gottfredson: Criminology, theory, crime and policy
Sora Han: Law and popular culture, critical race theory, philosophies of punishment, feminism and psychoanalysis
John R. Hipp: Community context of crime, household decisions and neighborhood change, research methods
C. Ronald Huff: Criminology and public policy
Valerie Jenness: The politics of crime control, criminalization, and policy making, law and inequality, social movements and social change, including hate crime and prison violence
Paul D. Jesilow: Crime and criminal justice
Elizabeth F. Loftus: Cognitive psychology, human memory, psychology and law
Mona Lynch: Punishment and society, race and criminal justice, law and society, research methods, psychology and law
Cheryl Maxson: Crime and delinquency, youth violence, juvenile justice system and policing street gangs
Richard McCleary: Criminal justice, research methodology, statistics
James W. Meeker: Sociology of law, criminal justice, research methodology, statistics
Joan Petersilia: Program evaluation, public policy, juvenile justice
Henry N. Pontell: Criminal justice, sociology of law, medical sociology
Justin B. Richland: Anthropology of law, legal discourse analysis and semiotics, indigenous law and politics, North American postcolonialism
Donna C. Schuele: Law and society, American legal/constitutional history, constitutional law, civil rights and civil liberties, women and law, crime and gender, judicial process and politics, California legal history
Carroll Seron: Sociology of law, sociology of professions, law and society
William C. Thompson: Forensic science, jury decision making, psychology and law
George E. Tita: Criminology, community context of violence, urban youth gangs, homicide studies
Susan F. Turner: Sentencing and corrections, applied research methods
James Diego Vigil: Urban research, urban poverty, culture change, socialization and education, psychological anthropology, street gangs in cross-cultural perspective, Mexico and U.S. southwestern ethnohistory, and comparative ethnicity
Sara Wakefield: Criminology, crime and public policy, life-course sociology and stratification, incarceration, prison reentry
Geoff Ward: Racialized social control, court organizations, juvenile justice, social movements, justice-related labor

Affiliated Faculty

David Theo Goldberg: Race, racism, race and the law, political theory, South Africa
Catherine Fisk: Labor and employment law, civil rights

The Department of Criminology, Law and Society focuses on the problem of crime and on understanding the social, cultural, political, and economic forces that interact with the law. Basic courses present overviews of American legal systems with particular emphasis on criminal and juvenile justice, forms of criminal behavior, the role of law in understanding social and psychological phenomena, and the applications of sociological theory in understanding law and legal systems. Subsequent course work provides a deeper understanding of the causes and consequences of crime, criminal justice policy, and socio-legal theory. In addition, substantive areas of law, such as criminal, environmental, and family law, are introduced. The Department offers a B.A. degree program in Criminology, Law and Society.

Students are provided with opportunities to become acquainted with the varieties of behavior that society chooses to control or regulate, the methods and institutions used to achieve that control or regulation, and the approaches aimed specifically at altering unacceptable behavior. In addition, there is provision for students to use their increasing knowledge of the law, its procedures, and institutions to enhance their understanding of the social sciences.

The course of study provides excellent preparation for law school and for graduate study in sociology, criminology, and criminal justice. Careers for students who terminate their University education at the baccalaureate level may be developed through placements in criminal justice and regulatory agencies, in organizations determining public policy, and in programs that deliver services to people who have difficulties with some aspect of the legal system.

Students are strongly encouraged to select electives in a variety of departments. Courses in areas such as Psychology, Sociology, Economics, and Political Science can provide a further context for the understanding of crime, law, and criminal justice, while courses in areas such as art history, theater, and music can enhance the quality of the student's entire life.

Field study placements are available in police departments, public defenders' offices, probation and parole agencies, the Orange County District Attorney's Office, the State juvenile detention system, the Orange County Victim/Witness Assistance Program, juvenile shelters, legislative offices, and in private legal firms.

Information on the graduate program begins on page 441.

REQUIREMENTS FOR THE B.A. DEGREE IN CRIMINOLOGY, LAW AND SOCIETY

University Requirements: See pages 55–62.

School Requirements: See page 426.

Departmental Requirements

Ten courses (40 units) as specified below:

A. Three upper-division required courses (12 units); students must select one course from each of the following three groups: (1) The Legal System, Law and Society, C101, C102, C103, C104, C105; (2) Crime and Criminology, C106, C107, C108, C109, C110; (3) Formal Institutions of Social Control, C111, C112, C113, C114, C115.

B. Seven upper-division elective courses (28 units) numbered C100–C191. (Courses taken to satisfy requirement A may not also be used to satisfy requirement B.)

Criminology, Law and Society Minor Requirements

Nine courses (36 units): Criminology, Law and Society C7, Environmental Analysis and Design E8, Psychology and Social Behavior 9, or 11A, B, C, and six upper-division Criminology, Law and Society courses selected from C100–C191.

NOTE: Students pursuing a major in the School of Social Ecology may not use upper-division course work for both school, major, or minor requirements. No overlap is permitted. Social Ecology 198 and 199 may not be applied toward the minor.

Courses in Criminology, Law and Society

***(Schedule of Classes* designation: Crm/Law)**

LOWER-DIVISION

C7 Introduction to Criminology, Law and Society (4). Lecture, three hours. Examines the major biological, sociological, and psychological explanations for crime and links them historically with prevailing systems of punishment. From classical criminology to positivism, investigates the evolution of criminological theories, their cultural and historical contexts, and their strengths and weaknesses. **(III)**

C20 Crime and the Cinema (4). Lecture, three hours. Examines crime films that reflect popular ideas about fundamental social, economic, and political issues. Provides students with a multi-layered view of crime, the criminal, the criminal justice system. Different genres in crime cinema are viewed and/or discussed.

UPPER-DIVISION

C100 Special Topics in Criminology, Law and Society (4). Lecture, three hours. *Special topics courses are offered from time to time. Course content* varies with interest of the instructor. Prerequisites: Criminology, Law and Society C7 and, in some cases, consent of instructor. May be repeated for credit as topics vary.

C101 Civil Legal System (4). Lecture, three hours. Provides an overview of the American civil legal system and of certain fundamental legal concepts as well as an introduction to legal research. Reading, briefing and debating judicial opinions, legal research, and writing an appellate legal brief. Prerequisite or corequisite: Criminology, Law and Society C7.

C102 Introduction to the Comparative Study of Legal Cultures (4). Lecture, three hours. Traces the anthropological and comparative cultural study of law from the nineteenth century to the present; briefly surveys the diversity of recorded legal cultures and critically examines key concepts which have been used to describe and classify them.

C103 American Socio-Legal Theory (4). Lecture, three hours. Evolution of American legal theory from nineteenth century to present in historical context of other human sciences; emphasizes shifting relation between legitimacy of legal decisions and legal system's relative autonomy; social science research use within legal system.

C104 Sociology of Law (4). Lecture, three hours. Examines law creation and law enforcement in their social and political context. Discusses the major theories of law and the modern state, and presents case studies in order to evaluate the strengths and weaknesses of these theoretical perspectives. Prerequisite or corequisite: Criminology, Law and Society C7.

C105 Psychology and the Law (4). Lecture, three hours. Psychological assumptions of American legal system and mental health aspects of provision of criminal justice services. Civil commitment, insanity defense, competence to stand trial, jury selection, eye-witness identification. Use of police, courts, correctional institutions in prevention of behavior disorder. Prerequisite: Criminology, Law and Society C7 or C101. Same as Psychology and Social Behavior 193E.

C106 Crime and Public Policy (4). Lecture, three hours. Explores nature and dimensions of crime in America and uses and limits of various strategies to control it. Topics include growth of imprisonment, the problem of domestic violence, the death penalty, gun control, and the potential of crime prevention programs.

C107 Deviance (4). Lecture, three hours. Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Same as Sociology 156 and Psychology 177D.

C108 Criminological Theory (4). Lecture, three hours. Explores the question of crime causation from a number of theoretical perspectives in the social sciences. Schools of thought examined include utilitarianism, positivism, human ecology, social structural approaches, social process (learning) theories, labeling, and radical-critical (political) perspectives. Prerequisite: Criminology, Law and Society C7.

C109 Juvenile Delinquency (4). Lecture, three hours. Patterns of delinquent behavior, theories that explain behavior, current research aimed at enhancing exploratory power. Attempts to prevent and control delinquency are put in historical perspective. Development of the current juvenile justice system and evolution of modern juvenile law. Prerequisite: Criminology, Law and Society C7. Same as Psychology and Social Behavior 193B.

C110 *Community Context of Crime* (4). *Lecture, three hours. Examines* the social context of high-crime communities, with special emphasis on the problems of poverty, joblessness, economic inequality, and racial discrimination. Assesses debates on the causes of these problems, and on the most effective policies to combat them.

C111 Theories of Punishment (4). Lecture, three hours. Survey of the various schools of thought regarding formal punishment theory. The purposes of legal sanctions are examined, including those of deterrence, rehabilitation, retribution, and incapacitation. Considers problems in realizing formal goals of punishment in practice.

C112 Legal Sanctions and Social Control (4). Lecture, three hours. Examination of criminal sanctions as mechanisms of social control. Includes the nature, function, and organization of courts as sanction generating institutions, and problems associated with punishing white-collar and corporate illegalities.

C113 Gender and Social Control (4). Lecture, three hours. Investigates how gender and social control interface such that each determines and reflects the other. Examines how the social world is organized around sex, sexuality, masculinities, femininities. Processes that regulate and channel social life, desire, conduct, differential allocation of social status.

C114 Miscarriages of Justice (4). Lecture, three hours. Systematically describes, explains, and analyzes the causes and consequences of the wrongful accusation, prosecution, incarceration, and sometimes even execution, of the innocent in the American criminal justice system. Prerequisite or corequisite: Criminology, Law and Society C7.

C115 Prisons, Punishment, and Corrections (4). Lecture, three hours. A review of how the U.S. punishes and rehabilitates convicted law violators. The conflicts among the major purposes of sentencing—rehabilitation, deterrence, incapacitation—are discussed, as well as the effects of different sanctions on public safety, offender rehabilitation, and justice system costs.

C117 Imprisonment and Reentry (4). Lecture, three hours; discussion, one hour. Offers an overview of imprisonment and reentry in the contemporary United States. Examines the development of the prison in the United States and explores changes in its composition, structure, and purpose over time.

C120 Law and Inequality (4). Lecture, three hours. Various aspects of the law as related to three specific areas of inequality: immigration and immigrants, race, and gender. The role of law as a tool of social reform and limitations of the legal system historically in resolving inequality issues.

C121 Science and Law (4). Lecture, three hours. Explores how the law accommodates scientific knowledge and new technologies. Among the topics are ownership of biological materials, intellectual property in the digital age, and toxic torts. Prerequisite or corequisite: Criminology, Law and Society C7.

C122 Constitutional Law (4). Lecture, three hours. Addresses the areas of freedom of speech, freedom of religion, the right to privacy, and discrimination. Specific issues include racial and gender bias, abortion, symbolic speech, freedom of the media, defamation, advocacy of violence, and obscenity. Prerequisite: Criminology, Law and Society C7. Criminology, Law and Society C122 and Political Science 171D or 174A may not both be taken for credit.

C123 Family Law (4). Lecture, three hours. Examines legal issues surrounding marriage, cohabitation, divorce, child custody and support, adoption, and the rights of parents and children in the family context. The findings of social science research are used to illuminate the legal issues. Prerequisite: Criminology, Law and Society C7 or C101. Same as Psychology and Social Behavior 193F.

C125 Child Development, the Law, and Social Policy (4). Lecture, three hours. Examines how psychology research and practice can inform areas of law and social policy affecting children and adolescents. Topics include education, mental health, reproductive rights, and delinquency. Goals are to evaluate research as well as identify the costs/benefits of current policies. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Psychology and Social Behavior 111D or 112D recommended. Same as Psychology and Social Behavior 120D.

C126 Drugs, Crime, and Social Control (4). Lecture, three hours. Drug abuse in the U.S.; the psychopharmacology of various drugs; biological, psychological, and sociological explanations for drug abuse. Policy issues are discussed; students will develop and defend a set of strategies for limiting harm done by drugs and drug laws.

C127 Hate Crimes (4). Lecture, three hours. Examines the causes, manifestations, and consequences of hate crimes and the larger social context within which they occur. The politics and dynamics of intergroup violence born of bigotry and manifested as discrimination; social policy designed to control bias-motivated violence.

C128 Environmental Law (4). Lecture, three hours. Environmental law as combination of traditional legal principles and newly created statutes, rules, and decisions applied to environmental protection. Investigates roles of courts, legislature, executive branch and administrative agencies, and private citizens attempting to regulate environmental quality. Federal and state laws utilized. Prerequisite: Environmental Analysis and Design E8 or Planning, Policy, and Design 4. Same as Planning, Policy, and Design 133.

C129 International Environmental Management (4). Lecture, three hours. Network of intergovernmental organizations (the United Nations, in particular) and international nongovernmental organizations in the field of environmental management. Analysis of key international projects and sources of information. Lessons for the integration of international research expertise. Prerequisite: Criminology, Law and Society C7. Same as Planning, Policy, and Design 137 and International Studies 123.

C130 Seminar on Gangs (4). Seminar, three hours. An overview of gangs, including the nature and definition of gangs; types of gangs; diversity of membership; theoretical explanations; criminal behavior; drug use and sales; law enforcement responses; gangs in correctional institutions; intervention and prevention strategies; and public policy issues. Prerequisite or corequisite: Criminology, Law and Society C7.

C131 Organized Crime and American Society (4). Lecture, three hours. Examination of the phenomenon of American organized crime from a sociological perspective. Explanation of methods by which organized crime is tolerated at various levels of society. Emphasis on ways in which "underworld" interests interact with legitimate economic and political institutions. Prerequisite or corequisite: Criminology, Law and Society C7.

C132 Forensic Science, Law, and Society (4). Lecture, three hours. Examines the use of "forensic science" to resolve issues arising in criminal cases including crime scene analysis, DNA testing, fingerprints, trace evidence comparisons, profiling, lie detectors, other forensic techniques; evaluation, statistical characterization, and legal admissibility of evidence; regulation of forensic laboratories. Prerequisite or corequisite: Criminology, Law and Society C7.

C133 Homicide and Suicide (4). Lecture, three hours. Examines similarities and differences among homicide and suicide, two major causes of death.

C134 Victimless Crimes (4). Lecture, three hours. Examines major theoretical, empirical, and policy-oriented research related to the design, implementation, and analysis of government intervention, through the criminal sanction, in the spheres of vice and morality. Prerequisite or corequisite: Criminology, Law and Society C7.

C136 Forensic Psychology (4). Seminar, three hours. Overviews all forensic psychology, then focuses on psychological analyses of criminal behavior, particularly violent behavior. Examines violence, sexual offending, and mental disorder related to crime with regard to clinical assessment, treatment, and rehabilitation; mental health services within forensic institutions. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Psychology and Social Behavior 102C; Psychology and Social Behavior 178S or Criminology, Law and Society C149, or consent of instructor. Same as Psychology and Social Behavior 156C and Psychology 177F.

C137 Criminal Procedure (4). Lecture, three hours. Examines the law governing arrests (with and without a warrant); police detention; search and seizure; interrogation; use of informers, eavesdropping, wiretapping; examination and identification of suspects. Pretrial motions such as speedy trial and discovery of evidence may be covered.

C139 Police and Change (4). Lecture, three hours. Organizational efforts to modify police conduct are addressed by focusing on the history of policing in the United States including training, education, and the contributions of women.

C142 White-Collar Crime (4). Lecture, three hours. Examines criminal activity in business and corporate enterprise, organizations, and the professions. Theories regarding the causes and control of white-collar and corporate crime are covered as well as the numerous definitions of these terms. Same as Sociology 142.

C143 Media, Intellectual Property, and Cyberlaw (4). Lecture, three hours. Explores the personal and intellectual property rights and obligations in media and on the Internet. Critically evaluates the challenge of interpreting constitutional rights in the digital world. Topics include Internet regulation, free speech, privacy, crime, biopatents, and artificial intelligence.

C144 Criminal Law (4). Lecture, three hours. Deals specifically with the substantive nature of criminal law and its historical development. Focuses on understanding the development of fundamental doctrinal principles upon which criminal law is based, including *mens rea, actus reus,* homicide, causation, group criminality, and exculpation.

C145 Government Crime (4). Lecture, three hours. Examines the legal, organizational, and political issues involved in the generation and control of government lawlessness. Readings present historical and theoretical perspectives in the abuse of government authority and the ability of the legal system to control such behavior.

C147 Law and Social Change (4). Lecture, three hours. Explores the relationship of law to its social setting by considering both law as a product of social change and law as a source or medium of change.

C148 Geographic Information Systems (4). Lecture, one and one half hours; laboratory, one and one half hours. Basic geographic, cartographic, and GIS concepts including computer representation of physical, political, statistical, and social aspects of space using vector and grid-based maps. Experience with extensive geographic base map files and databases through use of GIS software (ArcView 3.x). Same as Public Health 166.

C149 Violence in Society (4). Lecture, three hours. Current theory and research on aggression; anger and violence as problems in individual and social functioning. Process and functions of anger examined with regard to normal behavior and psychopathology. The determinants, prevalence, and implications of violence in society are analyzed. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Psychology and Social Behavior 178S.

C150 The Legal Profession (4). Lecture, three hours. Role of the legal profession in modern society, the diverse professional roles lawyers play, the American legal profession compared with that of other societies. "Litigation explosion," ethical problems, interactions between lawyers and other professionals, training and socialization of new lawyers. Prerequisite or corequisite: Criminology, Law and Society C7.

C151 Cybercrimes, Investigation, Forensics, and Prosecution (4). Lecture, three hours. Examines crimes committed against persons, property, society, and the government in which a computer is used. How these computer crimes are committed, investigated, and ultimately prosecuted.

C152 Interrogation, Confession, and the Law (4). Lecture, three hours. In-depth examination of the social psychology of police interrogation in America, the evolution of American interrogation practices from the nineteenth century to the present, impact of law on police behavior and ideology, causes and consequences of false confessions, possibilities of reform. Same as Psychology and Social Behavior 193D.

C154 Social Theory and the Law (4). Lecture, three hours. Provides theoretical tools to understand the relationship between law and society. Focuses on the connections between law and discourse, power, space and geography, economic markets, gender, race, class, democratic legitimacy, and the indeterminacy of language.

C156 Cross-Cultural Research on Urban Gangs (4). Lecture, three hours. Taking an urban policy approach, examines the background and contemporary traditions of gangs in several ethnic groups including African-, Asian-, and Mexican-Americans. Cross-cultural exploration of the varied facets of gang life. The major social-control institutions affecting them. Same as Chicano/Latino Studies 153. **(VII)**

C157 Language in Law and Society (4). Lecture, three hours. Considers the role of language in legal practice and power. Particular attention is paid to linguistic and discourse analytic research that covers topics such as: trial talk, language crimes, law talk in cross-cultural perspectives, and linguistic evidence.

C158 U. S. Law and Native Americans: Colonial Imagery, Native Nationhood (4). Lecture, three hours. Considers U.S. laws governing Native Americans and the way these laws shape and reflect popular conceptions of Native identity. Also surveys the legal practices that Native Nations themselves enact to articulate their sovereign status and identities. **(VII)**

C159 Employment Law and Society (4). Lecture, three hours. Covers federal and state laws that govern the employer-employee relationship, including "at will" employment; wrongful discharge; sexual harassment; discrimination; "whistle-blowing." Considers political, economic, ideological, and cultural factors that have shaped these laws and caused their evolution over time. Prerequisite: Criminology, Law and Society C7.

C161 Race, Ethnicity, and Social Control (4). Lecture, three hours. Provides a nuanced, sociological understanding of racial and ethnic group relations in contexts of criminal social control, and how social inequality, social movements, and social change manifest in these relations. Prerequisite: Criminology, Law and Society C7. Same as Chicano/Latino Studies 152A. **(VII)**

C163 Ethics and Politics of Justice (4). Lecture, three hours. Provides theoretical perspective on how ethics and politics relate to criminal justice through an introduction to moral philosophy; consideration of specific theories of punishment and justice; and consideration of practical and empirical illustrations of the intersection of ethics, politics, and justice. Prerequisite: Criminology, Law and Society C7.

C164 Social Control of Delinquency (4). Lecture, three hours. Assumes familiarity with theories of delinquency, the juvenile justice system, and elements of juvenile law. Explores socio-historical origins and evolution of juvenile justice, current research and policy on delinquency prevention and treatment, and future directions of law, policy, and practice. Prerequisite or corequisite: Criminology, Law and Society C7; Criminology, Law and Society C109 recommended. Same as Psychology and Social Behavior 193C.

C165 The Death Penalty (4). Lecture, three hours. Examines why the U.S. continues to have a death penalty when so many other countries have abandoned it. Arguments for and against the death penalty are covered. Prerequisite or corequisite: Criminology, Law and Society C7.

C170 Federal Law Enforcement (4). Lecture, three hours. The peculiar legal, organizational concerns of the federal system of law enforcement and some of the crimes it is uniquely designed to address—white-collar crime, drug trafficking, racketeering, public corruption. Roles, responsibilities of the FBI, DEA, Customs, other policing agencies. Prerequisites: Criminology, Law and Society C7.

C171 Latinos and the Law (4). Lecture, three hours; discussion, one hour. Examines a range of theoretical, empirical, and policy approaches to legal issues affecting the Latino population, with emphasis on California. Discusses topics concerning the purpose of law, the creation of law, and the enforcement of law. Same as Chicano/Latino Studies 142. **(VII)**

C172 Culture Change and the Mexican People (4). Lecture, three hours. Reviews culture contact and colonization, innovation diffusion, acculturation, assimilation, culture conflict and marginality, modernization, urbanization, legal transformations. Mexico and the Southwestern U.S. are reviewed through several centuries to better appreciate the indigenous base of the Mexican people. Same as Chicano/Latino Studies 155. **(VII)**

C177 Eyewitness Testimony (4). Lecture, three hours. Faulty eyewitness testimony is a major cause of wrongful convictions. Covers the fast-growing topic of eyewitness testimony and memory for real-world events, both how psychologists study eyewitness capacity, and how the legal system has dealt with eyewitness issues. Prerequisites: Social Ecology 10 and senior standing. Same as Psychology and Social Behavior 193G.

C181 Contemporary Legal Issues (4). Lecture, three hours. An in-depth analysis of current legal issues viewed from their political and constitutional perspectives. Issues studied are determined by instructor and student interest. Prerequisite: consent of instructor.

C185 Criminal Justice System Capacity (4). Lecture, three hours. Examination of "system capacity" in criminological and criminal justice related research and how it can be used to explain and describe current problems and practices in the American legal system. Limitations of sanctioning criminals due to political, physical space, and resource constraints. Prerequisite: Criminology, Law and Society C7.

C191 Law and Modernity (4). Lecture, three hours. The rise and spread of Enlightenment legal traditions, social contract theory, individual rights, ideologies of "liberty, equality, fraternity"; contradictions of liberal law, its understandings of "primitive" and "civilized"; pervasive myths of property, difference, race, and rights. Reading- and writing-intensive. Same as Anthropology 127A. **(VIII)**

C196 Research Seminar in Criminology, Law and Society (4). Seminar, three hours. Special topics research seminar. Content varies with interest of instructor. Capstone research opportunity with Criminology, Law and Society faculty members. Prerequisites: upper-division standing and consent of instructor. May be repeated for credit as topics vary.

DEPARTMENT OF PLANNING, POLICY, AND DESIGN

202 Social Ecology I; (949) 824-0563
http://socialecology.uci.edu/ppd
David L. Feldman, **Department Chair**

Faculty

M. Victoria Basolo: Housing and community development policy within the context of governmental relations
Victoria A. Beard: Planning in developing countries, community-based planning, poverty reduction, planning theory and population studies
Marlon G. Boarnet: Urban economics, urban planning, urban economic development
Scott A. Bollens: Ethnicity and urban planning, urban growth policy, metropolitan governance, intergovernmental approaches to planning
Tim-Allen Bruckner: Health policy and planning, health promotion, social and economic variation in health services
Ken Chew: Historical and applied demography, urban and environmental studies
Ross F. Conner: Evaluation research and social psychology, health promotion
Kristen Day: Urban issues in environment-behavior studies
Joseph F. DiMento: Planning, land use and environmental law, use of social science in policy making, legal control of corporate behavior

David L. Feldman: Water resources policy, global climate change, ethics and environmental decisions, adaptive management and sustainable development
Martha Feldman: Organization theory and behavior, stability and change in organizations, decision making and information processing
Ajay Garde: Urban design, urban form, sustainable growth
John D. Houston: Transportation planning, air and environmental quality, environmental equity issues
Helen Ingram: Public policy, U.S.-Mexico relations, environmental resource management
Raul Perez Lejano: Collaborative planning, environmental decision making, planning theories
Richard Matthew: International relations, environmental policy, ethics
Sanjoy Mazumdar: Environmental studies and design, organizational analysis, management and planning, and social and behavioral aspects of architecture
Daniel Stokols: Health impacts of environmental stressors, environmental design and social behavior
Luis Suarez-Villa: Innovation and technology, economic and social development, regional analysis
Rudolpho D. Torres: Urban political economy, Latino politics

Affiliated Faculty

Hoda Anton-Culver: Genetic epidemiology
Jan K. Brueckner: Urban economics
Paul J. Feldstein: Economics of health care
John Hipp: Neighborhood change and crime, quantitative methods
Richard McCleary: Criminal justice, research methodology, statistics
Michael G. McNally: Travel behavior, transportation systems analysis
David S. Meyer: Sociology
Judith S. Olson: Information sciences, human-computer interaction
Mark P. Petracca: Political science
Jean-Daniel M. Saphores: Environmental and natural resource economics and policy, transportation economics, planning and policy, quantitative methods
David A. Smith: Urbanization, comparative historical sociology, political sociology, world-system analysis
George Tita: Community context of crime, spatial analysis
Kerry D. Vandell: Real estate market dynamics, urban and economic amenities
Linda Trinh Võ: Asian American communities, social inequality, ethnography

The Department of Planning, Policy, and Design utilizes an interdisciplinary approach to the study of urban and regional planning, public policy issues, and the built environment. The Department faculty devote their scholarly and teaching efforts to theory-driven and empirically oriented urban research and their interests include urban and community development, environmental policy, health promotion and policy, and urban design and behavior. The faculty focuses on education in urban, social, public policy, and environmental problems.

The Department offers the B.A. degree in Urban Studies; undergraduate minors in Urban Studies, Urban and Regional Planning, and Environmental Design; the Ph.D. degree in Planning, Policy, and Design; and the Master of Urban and Regional Planning professional degree (fully accredited by the national Planning Accreditation Board). The Department's graduate degree programs feature innovative teaching often involving students in community projects, and a significant degree of accessibility by students to faculty members. Information about the graduate programs begins on page 441.

The faculty members in the Department are productive and influential scholars. The Department's teaching, research, and graduate training utilize UCI's proximity to both urban centers and planned communities, as well as the University's location within the dynamic and multicultural Southern California and Pacific Rim regions. Collaborative academic and research ties are maintained with UCI's Institute of Transportation Studies, Center for Global Peace and Conflict Studies, Newkirk Center for Science and Society, Focused Research Group on International Environmental Policy, Center for Community Health, Community Outreach Partnership Center, Center for Inequality and Social Justice, Center for Unconventional Security Affairs, Center for Organizational Research, and the Urban Water Research Center.

The common mission linking the Department's undergraduate, master's, and doctorate-level instruction and faculty research efforts is to bring applied research to the cause of bettering individuals, neighborhoods, communities, and regions. Southern California has grown dramatically over the past four decades and will soon become the nation's largest urban corridor. The challenges to maintain the quality of life, provide employment opportunities, and reduce the deep socioeconomic disparities of this bi-national and multicultural metropolitan region are enormous. Extremely diverse, multiethnic communities face the necessity of solving their problems in ways that are acceptable to their populations. Older central city areas that are vital to the region face issues of social and economic sustainability. The need to create employment opportunities, through the application of new technologies in industries and services, will be a constant feature of an urban region undergoing such population increases. At the same time, urban growth and transportation will have to meet increasingly stringent environmental regulations that can safeguard the population's health and quality of the diverse natural environments. The urban design and landscape of most communities stand to be reshaped as never before, as the building stock ages and the need to redevelop intensifies.

The Department is grouped into four major clusters, each addressing sets of important issues to contemporary society. Faculty members and students who study urban and community development examine contemporary planning approaches to managing local, community, and regional development and explore the spatial dynamics of urbanization in diverse settings and how public policy can guide urban and regional growth to balance environmental and economic concerns. Faculty members and students engaged in design-behavior research investigate the interrelationships of people and their socio-physical environments at all scales, from micro to macro, with emphasis on urban design and community-scale issues. Faculty members and students who examine environmental policy focus on the environment and natural resources as important policy and planning issues and provide a clear understanding about how politics, economics, ethics, and institutions affect planning and policy choices. Finally, faculty members and students who study health promotion and policy investigate issues at the interface between (1) urban planning and health policy and (2) community and individual health. They examine the public welfare, psychological, and health implications of social and physical planning, and the techniques and goals of public health policy making.

Undergraduate students who major in Urban Studies will become acquainted with the global challenges of urbanization and the analytical skills needed for addressing them. Students will acquire the background for entering graduate study in related fields, including urban planning, community and economic development, and transportation, to name only a few, or for seeking entry-level positions in fields that address urban problems, including urban planning, community development, transportation, and housing.

REQUIREMENTS FOR THE B.A. DEGREE IN URBAN STUDIES

University Requirements: See pages 55–62.

School Requirements: See page 426.

Departmental Requirements

Twelve courses (48 units) as specified below:

A. Four lower-division courses: Planning, Policy, and Design 4; Economics 20A; Political Science 21A or 51A; and Planning, Policy, and Design 40 or Sociology 43.

B. Eight upper-division elective courses, including at least one three-course "integrative string," must be completed. An integrative string consists of one designated integrative course plus any two other electives from the same course cluster. The course clusters and their respective integrative courses are as follows:

Urban and Community Development: Planning, Policy, and Design 100, 101 (integrative course), 102, 103, 105, 106, 107 (integrative course), 108 109, 110, 111, 112, Economics 144A-B.

Urban and Environmental Sustainability: Planning, Policy, and Design 100, 131 (integrative course), 132, 133, 134, (integrative course), 135, 136, 137, 138, 139, 140.

Urban and Environmental Design: Planning, Policy, and Design 100, 151 (integrative course), 152, 153, 154 (integrative course), 155, 156.

Urban Governance: Planning, Policy, and Design 100, 166 (integrative course), 167, 168, 169, 170, 171, 172, 173, 174, 175.

Urban Studies Minor Requirements

Eight courses (32 units): Planning, Policy, and Design 4 and seven additional courses selected from Planning, Policy, and Design 40, 100, 101, 102, 103, 105, 106, 113, 166, 172, 174, 177.

NOTE: A maximum of two courses may be counted toward both the minor in Urban Studies and the minors in Urban and Regional Planning, Environmental Design, *or* the major in Social Ecology.

Urban and Regional Planning Minor Requirements

Nine courses (36 units): Planning, Policy, and Design 4, 107, and seven additional upper-division courses selected from Planning, Policy, and Design 108, 109, 110, 111, 112, 113, 132, 133, 135, 137, 138, 139, 155, 156, 166, 167, 169, 176.

NOTE: A maximum of two courses may be counted toward both the minor in Urban and Regional Planning and the minors in Urban Studies, Environmental Design, *or* the majors in Urban Studies or Social Ecology.

Environmental Design Minor Requirements

Eight courses (32 units): Planning, Policy, and Design 151, 152, 153, and five additional courses selected from Planning, Policy, and Design 40, 133, 136, 154, 155, 156, Art History 145A, 145B, 145C.

NOTE: A maximum of two courses may be counted toward both the minor in Environmental Design and the minor in Urban and Regional Planning, *or* the majors in Urban Studies or Social Ecology.

Courses in Planning, Policy, and Design

***(Schedule of Classes* designation: PP&D)**

LOWER-DIVISION

4 Introduction to Urban Studies (4). Lecture, three hours. Introduces the substantive areas, concepts, and tools in the field of urban studies. Acquaints students with physical, environmental, social, economic, and political dimensions of cities. Examines the challenges facing cities, including poverty, sustainability, development, globalization, and others. **(III)**

40 Urban Sociology (4). Lecture, three hours. Overview of theoretical, substantive, and policy issues in urban sociology. History of urbanization, the school of human ecology, and recent trends regarding urbanism. Time is devoted to understanding the causes and possible solutions to urban problems. Planning, Policy, and Design 40 and Sociology 43 may not both be taken for credit. Formerly Planning, Policy, and Design 104.

UPPER-DIVISION

100 Special Topics in Urban Studies (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisite: in some cases, consent of instructor. May be repeated for credit as topics vary.

URBAN AND COMMUNITY DEVELOPMENT

101 Urbanization and Social Change (4). Lecture, three hours. Examines interactions between social structure and physical space: (1) the contemporary evolution of cities and their hinterlands in the U.S.; (2) patterns of urbanization in the Third World; and, as background for understanding these developments, (3) the re-emergence of cities in Medieval Europe. Prerequisite: Planning, Policy, and Design 4.

102 Urban Inequality (4). Lecture, three hours. Examines structural inequality and the influence that urbanization has in affecting race, ethnic, and class relations. Explores how race/ethnicity, class, urban space, housing, economic development, public education and land policy intersect in cities, both historically and today.

103 Comparative Urbanization in a Developing World (4). Lecture, three hours. Provides an introduction to comparative urbanization in developing countries. First introduces students to the geography, history, and theories of urbanization, and then reviews urban planning, public policy, and governance.

105 California's Population (4). Lecture, three hours. Surveys California's human population (past, present, and future) and its interactions with trends in society, government, the economy, and the environment.

106 Technology and Economic Development (4). Lecture, three hours. Covers importance of technology for urban economic and social development. Concepts of technological innovation and diffusion, and their relevance for cities and metropolitan areas. Principles of networks and their importance for diffusion. Relationship of technology with urban infrastructure and metropolitan form. Prerequisites: Social Ecology 10 and 13 or equivalent.

107 Urban and Regional Planning (4). Lecture, three hours. Important substantive areas, concepts, tools in the field of urban and regional planning. Topics include: forces that have historically guided and are currently guiding U.S. urbanization; land use, economic development, housing and community development, environmental planning; legal, environmental, governmental contexts. Prerequisite: Planning, Policy, and Design 4.

108 Cities and Transportation (4). Lecture, three hours. The relationship between urban areas and transportation systems. Economic analysis of cities, transportation and urban form, highway congestion, environmental impacts of transportation, public transit, land use and transportation, and political influences on transportation planning.

109 Housing and Urban Development Policy (4). Lecture, three hours. Surveys public policy issues and develops analytic techniques in the areas of housing and urban development. Examines a range of policy topics including housing assistance to low- and moderate-income families, housing finance system, incentives for economic development and neighborhood preservation. Recommended: previous course work in economics.

110 Urban Economic Development Policy (4). Lecture, three hours. Theoretical and practical perspectives on local economic development policy. Integrates economic, planning, political perspectives. Overview of economic role of cities and metropolitan areas. Specific development issues include link between taxes, regulation, job growth; redevelopment planning; evaluating economic development policy.

111 Strategies of Health Promotion (4). Lecture, three hours. Examination of strategies for promoting physical and mental health at community, organizational, and individual levels. Interventions designed to promote healthier lifestyles, organizational structures, and environmental conditions. Criteria for monitoring cost-effectiveness of these programs. Prerequisite: Environmental Analysis and Design E8 or Planning, Policy, and Design 4.

112 Foundations of Community Health (4). Lecture, three hours. A social ecological framework for understanding community health. Describes economic basis for the formation of communities. Addresses influence of biological, social; economic, and environmental factors on population health. Covers health promotion strategies such as behavioral, planning, and policy interventions. Prerequisite: Environmental Analysis and Design E8 or Planning, Policy, and Design 4.

113 Poverty in Developing Countries (4). Lecture, three hours. Focuses on poverty in developing countries. Analyzes the magnitude and changing nature of poverty in the global south. Critically examines poverty conceptualized in terms of economic deprivation, well-being, and social exclusion.

114 Engaging Globally (4). Lecture, one hour; seminar, one hour; field work, two hours. Introduces students to issues of community engagement and social action in international contexts. Prepares students to understand social and environmental problems in a globalized world. Includes online instruction, on-site service learning in structures projects, critical reflection, and final paper.

URBAN AND ENVIRONMENTAL SUSTAINABILITY

131 Environmental Sustainability I (4) W. Lecture, three hours. Provides an introduction to sustainability from different points of view; historical, scientific, political, ethical, and economic. Same as Earth System Science 180.

132 Environmental Sustainability II (4) S. Lecture, three hours. Investigates how sustainability can be implemented in a variety of contexts including water, energy, non-renewable resources, biodiversity, and urban policy, and also how it could be measured. Same as Earth System Science 182.

133 Environmental Law (4). Lecture, three hours. Environmental law as combination of traditional legal principles and newly created statutes, rules, and decisions applied to environmental protection. Investigates roles of courts, legislature, executive branch and administrative agencies, and private citizens attempting to regulate environmental quality. Federal and state laws utilized. Prerequisite: Environmental Analysis and Design E8 or Planning, Policy, and Design 4. Same as Criminology, Law and Society 128.

134 Human Ecology (4). Lecture, three hours. Explores the interaction of social choice and physical constraint in shaping the earth's human carrying capacity, including ramifications for local, regional, or global environmental issues. Prerequisite: Planning, Policy, and Design 4.

135 Environmental Impact Analysis (4). Lecture, three hours. Examines the environmental impact assessment process. Topics include impacts associated with biophysical and socioeconomic environmental effects, whether direct, indirect, or cumulative. Analysis of project alternatives, mitigation of impacts, methodologies for measuring impacts. Legislation and case law. Examples from case studies. Prerequisite: Planning, Policy, and Design 4 or consent of instructor.

136 Global Environmental Issues (4). Lecture, three hours. While many agree that environmental problems threaten humankind, there is much disagreement over the nature of these threats and how to address them. Examines global environmental issues from various perspectives in order to provide answers to these questions. Same as International Studies 120 and Political Science 143D.

137 International Environmental Management (4). Lecture, three hours. Network of intergovernmental organizations (the United Nations, in particular) and international nongovernmental organizations in the field of environmental management. Prerequisite: Criminology, Law and Society C7. Same as Criminology, Law and Society C129 and International Studies 123.

138 Environmental Politics and Policy (4). Lecture, three hours. Provides a multifaceted foundation for the development of environmental problem-solving and policy-making skills. Examines "nature" from a range of historical and cultural perspectives. Links socio-ecological stress theories to a range of landscapes and contemporary debates. Current air, water, and land policies. Same as Political Science 141A.

139 Water Resource Policy (4). Lecture, three hours. Examination of contemporary water problems worldwide, with particular attention to the competing demands for water in the western U.S., and water demand by the poor in developing countries. History and analysis of U.S. water policies at local, state, and federal levels.

140 Ethics and International Relations (4). Lecture, three hours. Introduces students to the dynamic field of ethics and international relations. A variety of traditional and emerging perspectives are examined, skeptical views are discussed in detail, and arguments are illustrated with current cases. Same as Political Science 146A. **(VIII)**

141 Brownfields: Law and Policy (4). Lecture, three hours. Examines the legal structure and policy issues of redeveloping contaminated properties know as Brownfields. Federal and state Brownfield programs, liability and risk management, cleanup and future land use, institutional controls, community economic revitalization, legislation and policies to encourage Brownfield redevelopment. Prerequisite: Environmental Analysis and Design E8 or consent of instructor.

URBAN AND ENVIRONMENTAL DESIGN

150 Experience Design (4). Lecture, three hours; discussion, one hour. Explores functional, experiential, emotional, sensorial, and extra-sensorial aspects of built and modified natural environments. Examines methods for acquiring, evaluating, and presenting information and developing specifications for designers' information needs and for assuring great designed environments. Prerequisites: Planning, Policy, and Design 4 and 152, or consent of instructor.

151 Environmental Psychology (4). Lecture, three hours. Impact of the physical environment on individual and group behavior. Three basic concerns examined: (a) environmental determinants of behavior at the individual and interpersonal level; (b) social planning and urban design; and (c) methodological approaches to the study of environmental issues. Prerequisites: Environmental Analysis and Design E8, Social Ecology 10, or Planning, Policy, and Design 4. Same as Psychology and Social Behavior 171S and Public Health 151.

152 Cultural Ecology and Environmental Design (4). Lecture, three hours. Introduction to cultural ecology and environmental and architectural design. With a view to understanding people's relationships with their built environments, the basic elements of architecture, architectural analysis, and cultural analysis are covered. Examines values in design and design for multicultural societies. Prerequisite: Planning, Policy, and Design 4.

153 Elements of Environmental Design (4). Lecture, three hours. Basic elements of environmental design such as scale, proportion, rhythm, color, sound, lighting, surfaces, texture, architectural definition of spaces, volumes, massing volumetric analysis, solids and voids, and cultural aspects of design. Excitement and creativity in design, imageability. Prerequisites: Planning, Policy, and Design 4 and 152.

154 Design and Behavior (4). Lecture, three hours. Introduces students to United States urban design and the significance of design for human well-being. Focuses on Southern California urban environment. Prerequisite: Planning, Policy, and Design 4.

155 Urban Design Principles (4). Lecture, three hours. Introduction to principles of urban design and its applications. Study of contemporary and traditional theories of urban design formulated to improve physical characteristics of built environment to facilitate an enhanced quality of life. A variety of case studies are discussed.

156 Urban Design and Graphics Studio (4). Lecture, three hours. Introductory course organized around a variety of assignments to encourage learning by design in a studio setting. Students work on design projects and graphic representation assignments to learn practical aspects of urban design.

URBAN GOVERNANCE

166 Urban Public Policy (4). Lecture, three hours. Examines why and how urban policies are enacted and carried out in contemporary U.S. cities and regions. Topics include: evolution and organization of city governments and policymaking over the past century; who has the power to direct public policy and control how cities develop. Prerequisites: Social Ecology 10 and Planning, Policy, and Design 4.

167 Public Policy and Management (4). Lecture, three hours. Exposes students to the best management practices that assure effective planning and implementation of policies and programs in government, business, and nonprofit sectors. Includes guest lecturers who are proven leaders in the four principal institutions of a community: business, education, government, and nonprofit.

168 Ethics and Public and Private Life: Advanced Seminar (4). Lecture, three hours. Examines ethical issues in public and private life by considering traditional moral theory in light of specific moral dilemmas, such as environmental policy, genocide, abortion, euthanasia, social welfare, and aid to other countries. Prerequisite: satisfactory completion of the upper-division writing requirement or consent of instructor. Same as Political Science 138B.

169 Public Policy Analysis (4). Lecture, three hours. Examines different approaches to the analysis of public policy with differing notions of what constitutes good policy, the role of government, and how citizens participate in policy-making. Suggests a policy-design perspective which builds upon other frameworks but concentrates on goals, implementation structures, tools, and rationales. Prerequisites: Planning, Policy, and Design 4 or Environmental Analysis and Design E8, and Planning, Policy, and Design 166. Same as Political Science 121E.

170 Health Policy (4). Lecture, three hours. Considers social and economic aspects of health and disease in the United States. What are the proper roles of the individual, community, and government in improving health and health care? International comparisons will be made wherever possible. Same as Public Health 122.

171 Community Response to Terrorism (4). Lecture, three hours. Examines risk perceptions and behaviors of individuals and societies in response to terrorism. Topics: unconventional and emerging threats, psychology of terror, coping and resilience, risk communication, media effects on psychological responses, public health preparedness for mass-casualty terrorism. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent.

172 Latino Metropolis (4). Lecture, three hours. Explores the processes of Latino urbanization in the United States and the spatialization of Latino identities, particularly in the context of Southern California with selected comparisons drawing from other cities. Same as Chicano/Latino Studies 154. **(VII)**

173 Technology Analysis (4). Lecture, three hours. Covers concepts of interest for policy-making and technology analysis, dealing with invention, innovation, and the socioeconomic impacts of new technologies. Comparative assessments of new technologies and their national and regional impacts on organizations, sectors, and activities. Prerequisites: Social Ecology 10 and 13.

174 Decisions, Games, and Other Public Policy Analytics (4). Lecture, three hours. Instruction on theory and use of different models for policy analysis. Emphasis on skills building and preparing students for use of these in their professional lives. Students are trained in real-world applications and institutional analysis.

175 Institutional Analysis: Studying Programs and Practices (4). Lecture, three hours. Study of the methods of examining institutions from macro, intermediate, and micro scales of analysis. Provides a wide range of skills for program analysis ranging from standard program evaluation to interpretive analytics. Prerequisites: upper-division standing and consent of instructor.

176 Public Participation in the U.S. (4). Lecture, three hours. Examines decisions that shape the communities in which we live, work, and play. Explores early forms of citizen involvement, planning theories and models, mandated public participation after World War II, and opposition to local development projects.

177 Chicano Movement (4). Lecture, three hours. Explores the history of Mexicans in the U.S. with particular attention paid to their integration into the U.S. capitalist economy. Examines this economic history and the Chicano movement, "El Movimiento," within the wide context of socio-economic change. Same as Chicano/Latino Studies 166.

DEPARTMENT OF PSYCHOLOGY AND SOCIAL BEHAVIOR

4201 Social & Behavioral Sciences Gateway; (949) 824-5574
Peter H. Dito, **Department Chair**

Faculty

Elizabeth E. Cauffman: Adolescent development, mental health, psychopathy, juvenile justice, female delinquency, legal and social policy

Susan Charles: Emotional processes across the adult life span, subjective experience and cognitive processes, health and emotion

Chuansheng Chen: Cross-cultural psychology, socialization of achievement, adolescent development, brain imaging of language and mathematical learning

K. Alison Clarke-Stewart *(Emerita)*: Development in early childhood and the effects of variation in the social environment

Thomas J. Crawford *(Emeritus)*: Attitude theory and social problems research

Sally S. Dickerson: Stress physiology, psychoneuroimmunology, effects of social evaluation or rejection on emotional and physiological outcomes, self-conscious emotions, health psychology

Peter H. Ditto: Social psychology, judgment and decision making, the role of emotion and motivation in social, political, moral, medical, and legal judgment

C. David Dooley: Community psychology, epidemiology, economic change

Joanne Frattaroli: Expressive writing, meta-analysis, positive psychology, health psychology, preventive medicine, educational psychology

Wendy A. Goldberg: Developmental psychology, work and family, mother-father-child relationships, parental involvement in education, transition to parenthood, autism

Ellen Greenberger *(Emerita)*: Developmental psychology, cross-cultural research, cultural, family, and peer influences on "normal" and problematic adolescent development, transition to adulthood, origins and consequences of self-entitlement

Jutta Heckhausen: Life-span developmental psychology, motivation and developmental regulation in children, adolescents, and adults, control and health, cultural universals and differences in achievement behavior

Larry Jamner: Health psychology, psychophysiology, biopsychosocial factors related to tobacco use in youth

Eric D. Knowles: Cultural influences on social inference, white racial identity, beliefs and attitudes concerning intergroup inequality, social and political ideology

Linda J. Levine: Relations between cognitive and emotional development, how emotions influence attention and memory, the development of children's strategies for coping with negative emotions

Elizabeth F. Loftus: Human memory, psychology and the law, how facts, ideas, suggestions and other forms of post-event information can modify our memories

Angela F. Lukowski: Memory development in infancy and early childhood, individual differences in long-term memory in infancy, the impact of early nutrition on development

Salvatore R. Maddi: Personality, psychopathology, health psychology, creativity, stress management, resilience through hardiness

Raymond W. Novaco: Anger, stress, violence, cognitive-behavioral interventions

Candice L. Odgers: Developmental psychopathology, longitudinal analysis of growth and change, effects of externalizing disorders on health

JoAnn Prause: Social costs of inadequate employment, adverse effects of unemployment, progression of alcohol disorder, early onset drinking among adolescents

Jodi Quas: Memory development, the effects of stress on memory, emotional reactivity in childhood, children's involvement in the legal system, children's eyewitness testimony

Karen S. Rook: Gerontology, social psychology, health psychology, social support and social networks

Roxane Cohen Silver: Coping with stressful life events (e.g., personal traumas, natural disasters, terrorism)

Jennifer Skeem: Mental illness and criminal justice, personality disorder and antisocial behavior, violence risk assessment and treatment

Daniel Stokols: Health impacts of environmental stressors, environmental design and social behavior, processes and outcomes of transdisciplinary scientific collaboration

Elaine Vaughan *(Emerita)*: Environmental assessment, risk perceptions, research methodology, social psychology

Carol K. Whalen: Child and adolescent psychopathology, ADHD across the life span, developmental health psychology, pharmacotherapy

Ilona S. Yim: Psychobiology of stress, stress in pregnancy, women's health, developmental psychobiology, behavioral genetics, assessment of stress

Affiliated Faculty

Margaret R. Burchinal: Statistics, childcare and pre-kindergarten, evaluation

Lawrence F. Cahill: Neural mechanisms of emotionally influenced memory

Belinda Campos: Culture, relationships, positive emotion, health

Lindsey Richland: Development of higher-order reasoning; learning and memory

Michael D. Rugg: Human memory, EEG, fMRI, neuroimaging, aging

Mark Steyvers: Computational models for knowledge extraction and processing, models for human memory and dynamic decision making, causal reasoning, Bayesian Networks

William C. Thompson: Use of expert evidence in the courtroom, including forensic science, particularly forensic DNA tests, statistical testimony, social science evidence of all types

Deborah Lowe Vandell: Developmental process and education, longitudinal methods, early child development, after-school programs

Pathik Wadhwa: Behavioral perinatology, biobehavioral processes, stress, pregnancy, fetal development, prematurity, fetal programming of health and disease, psychoneuroendocrinology, psychoneuroimmunology

The Department of Psychology and Social Behavior is concerned with human behavior in social contexts. A major objective is to investigate how different social environments (e.g., the family, school, workplace, culture) affect health and human behavior

across the life span. The Department's faculty share a strong commitment to interdisciplinary scholarship and research that has the potential for application to important societal problems. Students begin with basic course work in developmental psychology, health and preclinical (abnormal) psychology, and social and environmental psychology. Subsequent courses cover such topics as social, emotional, and cognitive development in children, adolescents, adults, and the elderly; behavior disorders and developmental psychopathology; cultural, social, and personality influences on behavior; attitude formation and change; health psychology; cognition and emotion; stress and coping; psychology and the law; and counseling and therapy. Opportunities are available to work with faculty members on research in these and other areas. Obtaining research experience as an undergraduate also provides a valuable background for entry into many graduate programs. The Department offers a B.A. degree program in Psychology and Social Behavior.

Students are given a foundation that will enable them to pursue graduate work in psychology, public health, health services, social work, counseling, or education, or to work after graduation from UCI in both the private and public sectors. Field study opportunities include hospital settings, social service agencies, educational institutions, and community health clinics and counseling centers, among others.

Students should be aware that psychology courses are offered in several different departments and programs at UCI. Students interested in developmental, clinical, social, emotional, health, cross-cultural, or environmental psychology, or in psychology and the law, are advised to consult the course listings here in the Department of Psychology and Social Behavior section. These courses offer students a solid foundation in general psychology. Students interested in language, perception, sensorimotor integration, memory, learning, mathematical psychology, and neuroscience are advised to consult the course listings in the Department of Cognitive Sciences and the School of Biological Sciences sections of the *Catalogue.*

Information on the graduate program begins on page 441.

REQUIREMENTS FOR THE B.A. DEGREE IN PSYCHOLOGY AND SOCIAL BEHAVIOR

University Requirements: See pages 55–62.

School Requirements: See page 426.

Departmental Requirements

Thirteen courses (52 units) as specified below:

A. Psychology and Social Behavior 11A, B, C, Psychology Fundamentals (12 units)

B. Four upper-division Psychology and Social Behavior core courses (16 units):

101D Life Span Developmental Psychology
102C Abnormal Psychology
103H Health Psychology
104S Social Animal: An Introduction to Social Psychology

C. Six upper-division Psychology and Social Behavior courses (24 units) chosen from the following:

C-1. Three upper-division specialty courses chosen from three of the four groups:

Group 1: Developmental Psychology (110D–134D)
Group 2: Health Psychology (135H–149H)
Group 3: Pre-Clinical/Psychopathology (150C–169C)
Group 4: Social, Personality, and Environmental Psychology (170S–189S)

C-2. Three additional upper-division courses chosen from the specialty areas in C-1 above or from courses numbered Psychology and Social Behavior 100, 190–193Z, 196, Social Ecology H190A, and H190W. NOTE: Courses used to satisfy requirement C-1 cannot be used to satisfy C-2; a maximum of two courses from 192A-Z and one 196 course may be counted toward the major; only one Peer Counseling course, either 158C or 159C, may be counted toward the major.

Psychology and Social Behavior Minor Requirements

The minor in Psychology and Social Behavior is met by completing eight courses (32 units). Students have the option of choosing between two versions of the minor as specified below:

Psychology and Social Behavior 11A, B, C; Social Ecology 10; and four upper-division Psychology and Social Behavior courses selected from 100–193Z; *or*

Psychology and Social Behavior 9; Social Ecology 10; and six upper-division Psychology and Social Behavior courses selected from 100–193Z.

Residence Requirement for the Minor: Six courses required for the minor must be completed successfully at UCI.

NOTE: Upper-division courses taken for the Psychology and Social Behavior minor may not be applied toward any other major, minor, or school requirements at UCI. Social Ecology 198 and 199 may not be applied toward the minor.

Excellence in Research in Psychology and Social Behavior

High-achieving students majoring in Psychology and Social Behavior can earn Excellence in Research in Psychology and Social Behavior by participating in a two-component program consisting of faculty-supervised research and courses in methodology and statistics. To be eligible for the program, students must have earned an overall 3.2 UC GPA in their junior year, with grades of B or above in the required methodology and statistics courses (Social Ecology 10, 13, 111, and Psychology and Social Behavior 190). Students will work with a faculty mentor during at least two quarters of the junior year in 196 or Social Ecology 198 or 199. Successful completion of the program also requires faculty-mentored research (Social Ecology H190A-B) and completion of a senior research thesis or a report at a research conference (Social Ecology H190W). Applications for the program are submitted in the spring quarter of the senior year, after completion of all requirements.

Courses in Psychology and Social Behavior

***(Schedule of Classes* designation: Psy Beh)**

LOWER-DIVISION

9 Introduction to Psychology (4) F, W, S, Summer. Lecture, three hours. Introduction to field of psychology, addressing the application of scientific methods to the study of human development, learning, memory, problem solving, perception, biological mechanisms, emotions and motivation, personality, psychopathology, and effects of diverse social and cultural contexts on human behavior. Same as Psychology 7A. No credit for Psychology and Social Behavior 9/Psychology 7A if taken concurrently with, or after, any of the following: Psychology and Social Behavior 11A, B, or C, Psychology 9A, B, or C. Formerly Psychology and Social Behavior P9. **(III)**

11A, B, C Psychology Fundamentals (4-4-4) F, W, S. Lecture, three hours. Designed to provide freshman Psychology and Social Behavior majors with an in-depth survey of general psychology. Topics include biological bases of behavior, sensation, perception, cognition, development, personality, psychopathology, and social psychology. Same as Psychology 9A, B, C. No credit for Psychology and Social Behavior 9/Psychology 7A if taken concurrently with, or after, any of the following: Psychology and Social Behavior 11A, B, or C, Psychology 9A, B, or C. Formerly Psychology and Social Behavior P11A, B, C. **(III)**

UPPER-DIVISION

100 Special Topics in Social Behavior (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of instructor. Prerequisites: Psychology and Social Behavior 9 or 11C, or Pyschology 7A or 9C, or equivalent. May be repeated for credit as topics vary. Formerly Psychology and Social Behavior P100.

CORE COURSES

101D Life Span Developmental Psychology (4). Lecture, three hours. Addresses the major issues, concepts, and methods of life span developmental psychology. The fundamental theories, distinctive methods, and the physical, perceptual, cognitive, social, motivational, and emotional development for each developmental phase of the life course are considered. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Formerly Psychology and Social Behavior P106.

102C Abnormal Behavior (4). Lecture, three hours. Survey of disorders organized by the diagnostic categories of the American Psychiatric Association. Interdisciplinary orientation combines environmental, psychological, and organic perspectives on etiology and treatment. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Social Ecology 10. Psychology and Social Behavior 102C and Psychology 120A may not both be taken for credit. Formerly Psychology and Social Behavior P105.

103H Health Psychology (4). Lecture, three hours. Theory and research are considered as they contribute to an understanding of the role of psychological processes in health and illness. The distinction between prevention and treatment of illness is established, and a variety of psychosocial interventions are elaborated. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P103.

104S Social Animal: An Introduction to Social Psychology (4). Lecture, three hours. Theories and research exploring social behavior and social influences on behavior. Topics include methods of social research, attitude formation and change, social perception, the social self, stereotypes and prejudice, conformity, obedience, altruism, aggression, interpersonal relationships and love, and group behavior. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P108.

DEVELOPMENTAL PSYCHOLOGY

110D Infant Development (4). Lecture, three hours. Study of human development from conception through the first two years of life, covering processes and events in the domains of physical, social, and cognitive development. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Same as Psychology 127I. Formerly Psychology and Social Behavior P115D.

111D Child Development (4). Lecture, three hours. Examines social, emotional, and intellectual growth and development between the ages of 2 and 12 years. Prerequisite: Psychology and Social Behavior 9 or 11B, or Pyschology 7A or 9B, or equivalent. Psychology and Social Behavior 111D and Psychology 120D may not both be taken for credit. Formerly Psychology and Social Behavior P113D.

112D Adolescent Development (4). Lecture, three hours. Examines current research on the biological, social, and cultural contexts of adolescent development. Topics include the impacts of puberty, adolescents' decision-making competencies, changes in family and peer relationships, identity development, and psychosocial problems such as depression and problem behavior. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Psychology and Social Behavior 112D and Psychology 21A may not both be taken for credit. Formerly Psychology and Social Behavior P114D.

113D Adult Development (4). Lecture, three hours. Examines why and how we change (with attention to gains as well as losses) from ages 25–65 and the nature and sources of continuity over time. Topics include physical and intellectual functioning, personality, coping strategies, and social roles and relationships. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Same as Psychology 127A. Formerly Psychology and Social Behavior P116D.

114D Gerontology (4). Lecture, three hours. Examines stereotypes and myths associated with aging; physiological and psychological changes that accompany old age; distinguishes behavior changes due to aging *per se* from those due to historical and socioeconomic factors; political, social aspects of old age in contemporary society. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Same as Psychology 127G. Formerly Psychology and Social Behavior P117D.

115D Cognitive Development (4). Lecture, three hours. Examines theories on nature of cognitive development. Discusses behaviorist theories on role of the environment including those of Vygotsky and Piaget, and recent evidence from cognitive psychologists stressing the importance of knowledge and skills within specific domains. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Psychology and Social Behavior 115D and Psychology 141D may not both be taken for credit. Formerly Psychology and Social Behavior P120D.

116D Human Development and Cross-Cultural Perspectives (4). Lecture, three hours. Human development in diverse cultures (e.g., Asian, American, and African). Special emphasis on East-West contrasts and when East meets West (i.e., Asian-American experiences). Topics include parenting, family relations, language and cognition, schooling and academic achievement, and morality. Prerequisites: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent; Social Ecology 10. Formerly Psychology and Social Behavior P124D.

117D Development of Gender Differences (4). Lecture, three hours. Examination of research on how sexes differ in physiology, cognitive functioning, personality, and social behavior. Sex-differentiated development from the prenatal period through adulthood. Explanations for male-female differences are sought, focusing on biological (genetic, hormonal), and social (familial, cultural) mechanisms. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Same as Psychology 127D. Formerly Psychology and Social Behavior P122D.

118D Human Sexuality (4). Lecture, three hours. A broad survey of human sexuality encompassing genetic factors, physiological and anatomical development, customary and atypical forms of behavior, reproductive processes, and cultural determinants. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Formerly Psychology and Social Behavior P121D.

119D Development of Motivation Across the Life Span (4). Major concepts in motivation and self-regulation as they develop during the phases of life. Topics include: development of action in infants; childhood conceptions about competence; causal attributions for success and failure; beliefs about control; goal-engagement and disengagement across adulthood. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; and either Psychology and Social Behavior 101D or 176S, and consent of instructor. Formerly Psychology and Social Behavior P191E.

120D Child Development, the Law, and Social Policy (4). Lecture, three hours. Examines how psychology research and practice can inform areas of law and social policy affecting children and adolescents. Topics include education, mental health, reproductive rights, and delinquency. Goals are to evaluate research as well as identify the costs/benefits of current policies. Prerequisites: Psychology and Social Behavior 9 or 11C, Psychology 7A or 9C, or equivalent; Psychology and Social Behavior 111D or 112D recommended. Same as Criminology, Law and Society C125. Formerly Psychology and Social Behavior P165S.

121D Work and Family (4). Lecture, three hours. Effects of employment and unemployment on mental health and marital quality; effects of work on parenting and child development; corporate and social policies for "families that work"; young adults' decision-making about work and family. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P170P.

122D Family, Society, and Education (4). Lecture, three hours. Examines the development of children's academic and cognitive competence in social context. Effects of parental beliefs, home environment, school environment, peer norms, community norms, cultural values. Effects of selected demographic factors such as ethnicity, parental SES, maternal employment, birth order. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P166S.

123D Child in the Family, School, and Community (4). Lecture, three hours. The ecological study of contexts in which the child develops and is socialized: the family, school, peer group, media, and community. Examines the impact of societal influences, such as culture, religion, economics, politics, and technology. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P191A.

124D Impacts of Divorce (4). Lecture, three hours. Examines divorce in historical, economic, and, primarily, psychological contexts, emphasizing recent research pertaining to the impacts of divorce on children, families, and society. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Psychology 177I. Formerly Psychology and Social Behavior P171P.

125D Perspectives on Child Rearing (4). Lecture, three hours. Examines parenting across contexts using an ecological and family systems perspective. Attention to the interplay between social influences and individual characteristics in relation to contemporary parenting issues such as single parenting, adoption, and children with special needs. Prerequisite: Psychology and Social Behavior 9 or 11B, or 11C, or Psychology 7A or 9B, or 9C, or equivalent. Formerly Psychology and Social Behavior P123D.

HEALTH PSYCHOLOGY

135H Introduction to Biopsychology (4). Introductory overview of the biology of behavior with a focus on the structure and function of the brain. Selected behaviors (e.g., eating, sleeping) and psychological states (e.g., stress, psychiatric disorders) are addressed from a biopsychological perspective. Prerequisite: Psychology and Social Behavior 9 or 11A, or Psychology 7A or 9A, or equivalent. Formerly Psychology and Social Behavior P191H.

136H Behavioral Medicine (4). Lecture, three hours. Examines biobehavioral aspects of health and illness, focusing on how stress contributes to or exacerbates disease processes. Background information on psychosomatic medicine and stress models and detailed examination of specific organ systems emphasizing the reactivity of these systems to stress. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P134H.

137H Human Stress (4). Lecture, three hours. Stress as a multidisciplinary topic. Biological, psychological, and sociological approaches to adaptation-related disorders. Effects of acute and chronic stress on emotions, physiology, and behavior. Methods of stress assessment, stress reduction, and intervention. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P127H.

138H Child Health Psychology (4). Lecture, three hours. Exploration of psychological antecedents, concomitants, and consequences of medical illnesses in children. Children's beliefs about health, illness, and medication; the role of stress; coronary-prone behavior; therapeutic adherence and physician-patient interaction; coping with chronic illness; effects of a child's illness on family. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Social Ecology 10 recommended. Same as Psychology 127H. Formerly Psychology and Social Behavior P131H.

139H Sports Psychology (4). Lecture, three hours. Psychological components of athletic performance with regard to scientific and practical issues. Roles of cognitive processes, physiological arousal, and emotion. Various personality factors related to performance, competition, and coaching. Strategies for improving athletic performance for individual and team competition. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P135H.

140H The Hardiness Approach to Stress Management (4). Lecture, three hours. Hardiness is a new development within psychology involving a combination of motivations and skills that extensive research has shown enhances performance, conduct, morale, stamina, and health. Combines study of hardiness research with strategies for improvement of personal hardiness through a series of exercises. Formerly Psychology and Social Behavior P125H.

141H Clinical Health Psychology (4). Lecture, three hours. Role of behavior in etiology, treatment, and prevention of certain diseases. Behavioral intervention including biofeedback, stress-, pain-management, health habit counseling, and other skills to assist patients make cognitive, emotional, and behavioral changes needed to cope with disease or achieve better health. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Public Health 141. Formerly Psychology and Social Behavior P141H.

PRE-CLINICAL/PSYCHOPATHOLOGY

150C Clinical Psychology (4). Lecture, three hours. Overview of theories, assessment techniques, research methodologies and intervention approaches in clinical psychology. Psychodynamic, behavioral, humanistic, and cognitive perspectives are examined along with ethical and professional issues. Prerequisites: Psychology and Social Behavior 9 or 11C; or Psychology 7A or 9C, or equivalent; Social Ecology 10; Psychology and Social Behavior 102C. Formerly Psychology and Social Behavior P146C.

151C Psychological Testing and Assessment (4). Lecture, three hours. Laboratory-seminar exploration of diverse methods of assessing, analyzing, and recording behavior. Includes methods of direct behavioral observation, structured (analog) assessments, rating scales, interviewing, and self-monitoring. Development of assessment skills and their application in intervention and research programs. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Psychology and Social Behavior 102C or 150C. Social Ecology 10 recommended. Formerly Psychology and Social Behavior P147C.

152C Clinical Child Psychology (4). Lecture, three hours. Examines research and theory concerning childhood psychopathology behavior disorders. Diagnosis and assessment, early identification of high-risk children, fears and phobias, antisocial behavior, childhood psychoses, autism, depression, attention deficit/hyperactivity disorders, and ethical and policy implications of identifying children who are different. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Psychology 127C. Formerly Psychology and Social Behavior P107.

153C Developmental Psychopathology (4). Lecture, three hours. Research and theory of origins, course, and outcomes of disordered behavior. Continuity and change in patterns of behavior; environmental challenges and buffers; stress and competence in children; vulnerable and invincible children; children of mentally ill parents; families at risk; childhood antecedents of adult disorders. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Psychology 120A or consent of instructor; Social Ecology 10 recommended. Same as Psychology 177P. Formerly Psychology and Social Behavior P152C.

154C Cognitive Behavior Therapy (4). Lecture, three hours. Presentation of principles and procedures of therapeutic interventions based on cognitive-behavior methods. Cognitive factors in learning, emotional arousal, psychological disorder, and psychotherapy reviewed. Introduces the application of cognitive behavioral methods to problems of depression, anxiety, anger, pain, and impulsivity. Prerequisite: Psychology 7A or 9A, 9C; or Psychology and Social Behavior 9 or 11A, 11C; or equivalent. Same as Psychology 147C. Formerly Psychology and Social Behavior P150C.

155C Child Therapies (4). Lecture, three hours. Examines research methodologies, empirical data, and implications of diverse intervention strategies. Primary topics include psychotherapy process and outcome, family therapies, behavioral intervention, cognitive behavior modification, pediatric psychopharmacology, and ethical and social policy implications of intervening in other people's lives. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Psychology 122C or consent of instructor. Same as Psychology 127T. Formerly Psychology and Social Behavior P151C.

156C Forensic Psychology (4). Seminar, three hours. Overviews all forensic psychology, then focuses on psychological analyzses of criminal behavior, particularly violent behavior. Examines violence, sexual offending, and mental disorder related to crime with regard to clinical assessment, treatment, and rehabilitation; mental health services within forensic institutions. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Psychology and Social Behavior 102C; Psychology and Social Behavior 178S or Criminology, Law and Society C149, or consent of instructor. Same as Criminology, Law and Society C136 and Psychology 177F. Formerly Psychology and Social Behavior P145C.

157C Existential Psychology (4). Lecture, three hours. Overall emphasis on life's meaning and direction as an unfolding expression of the pattern of decisions engaged in by each person. Topics include relevant personality and developmental theory, research, and philosophy, as well as applied consideration of diagnostic testing and psychotherapy. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P153C.

158C Peer Counseling I (4). Lecture, three hours. Focuses on the development of basic counseling skills and knowledge of specific issues related to the student population. Students are required to provide supervised coaching and counseling services to the campus community. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P154C.

159C Peer Counseling II (4). Second quarter of two-quarter course which focuses on the development of basic counseling skills and knowledge in specific issues related to the student population. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Psychology and Social Behavior 158C, and consent of instructor. Formerly Psychology and Social Behavior P155C.

SOCIAL, PERSONALITY, AND ENVIRONMENTAL PSYCHOLOGY

170S Personality (4). Lecture, three hours. Comparison of the major theories of personality. Provides a frame of reference for understanding lifestyles, development, maturity, and psychopathology. Emerging research themes are used to identify promising lines of personality theorizing. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Psychology and Social Behavior 170S and Psychology 120P may not both be taken for credit. Formerly Psychology and Social Behavior P144C.

171S Environmental Psychology (4). Lecture, three hours. Impact of the physical environment on individual and group behavior. Three basic concerns examined: (a) environmental determinants of behavior at the individual and interpersonal level; (b) social planning and urban design; and (c) methodological approaches to the study of environmental issues. Prerequisites: Social Ecology 10, or Environmental Analysis and Design E8 or Planning, Policy, and Design 4. Same as Planning, Policy, and Design 151 and Public Health 151. Formerly Psychology and Social Behavior P109.

172S Attitudes and Behavior (4). Lecture, three hours. Intended for students interested in theory and research on how attitudes influence, and are influenced by, behavior. Topics include: voting behavior, Fishbein and Ajzen's theories of reasoned action and planned behavior, attitude accessibility, prejudice and discrimination, and cognitive dissonance theory. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Psychology 127S. Formerly Psychology and Social Behavior P157S.

173S Social Relationships (4). Lecture, three hours. Examines major issues, concepts, and methods in the scientific study of social relationships. Topics include relationship formation and dissolution, friendships and love relationships, loneliness, bereavement, societal influences on close relationships, significance of close relationships for health and well-being. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Social Ecology 10. Formerly Psychology and Social Behavior P158S.

174S Error and Bias in Social Judgment (4). Lecture, three hours. Examines how people encode, reason about, and remember social information and explores how biases and shortcomings in social perception, judgment, and memory are central to understanding both effective social functioning and many forms of maladaptive behavior and social conflict. Prerequisite: Psychology and Social Behavior 9 or 11C or Psychology 7A or 9C, or equivalent. Formerly Psychology and Social Behavior P162S.

175S Cognition and Emotion (4). Lecture, three hours. Examines relations between cognition and emotion. How have the relations between cognition and emotion been construed historically? How closely related are cognitive and emotional development? How do emotions influence reasoning and memory? How similar is emotional experience across cultures? Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Formerly Psychology and Social Behavior P119D.

176S Motivation (4). Lecture, three hours. History, major theories, methods, and applications of motivational psychology, with emphasis on European approaches. Origins of the field in personality, learning, cognition, and activation research. Recent innovations in motivational and volitional self-recognition. Current approaches, major debates, empirical research programs. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C; 101D; 104S or Environmental Analysis and Design E108U. Psychology and Social Behavior 176S and Psychology 121M may not both be taken for credit. Formerly Psychology and Social Behavior P191D.

177S Psychology and Emotion (4). Lecture, three hours. General theories of emotion and research regarding cognitive, behavioral, physiological, and subjective experience of emotion. Specific topics include emotion regulation, emotion and health, emotional intelligence, and emotional development. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Psychology 127E. Formerly Psychology and Social Behavior P143H.

178S Violence in Society (4). Lecture, three hours. Current theory and research on aggression; anger and violence as problems in individual and social functioning. Process and functions of anger examined with regard to normal behavior and psychopathology. The determinants, prevalence, and implications of violence in society are analyzed. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Criminology, Law and Society C149. Formerly Psychology and Social Behavior P175P.

179S Cultural Psychology (4). Lecture, three hours. An examination of culture's influence on human minds. Topics include culture's impact on perception, cognition, motivation, emotion, moral reasoning, communication, and health. Addresses cultural psychology's methods, history, and place within psychology and related fields. Prerequisite: Psychology and Social Behavior 9 or 11B or 11C, or Psychology 7A or 9B or 9C.

180S Organizational/Industrial Psychology (4). Lecture, three hours. Introduction to applied psychology in organizations, including personnel testing, selection, training and evaluation, job and classification analysis, job satisfaction and motivation, organizational development, leadership, market research and consumer psychology. Potential ethical problems are discussed. Prerequisite: Psychology and Social Behavior 9 or 11A, or 11B, or 11C, or Psychology 7A or 9A, or 9B, or 9C, or equivalent, or consent of instructor. Same as Psychology 122I. Formerly Psychology and Social Behavior P192B.

181S Beliefs, Attitudes, and Health Behaviors (4). Lecture, three hours. Examines health-relevant beliefs, attitudes, and behaviors from a social psychological perspective. Topics include: self-control; obesity; sexual behavior; medication errors, stress, perceived control and social support; happiness and well-being; changing health attitudes and behaviors; self-disclosure and health. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Public Health 140. Formerly Psychology and Social Behavior P140H.

182S Violence and Ideas Concerning the Social Order (4). Seminar, three hours. Historical and philosophical perspectives of violence as a way to enhance social science views. Violence as a problem of the social order. The state of nature, the social contract, and human destructiveness explored in conjunction with overviews of violence and warfare. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; and consent of instructor. Formerly Psychology and Social Behavior P176P.

183S Social Epidemiology (4). Lecture, three hours. Overviews evidence linking environmental factors to mental and physical disorders including such variables as socioeconomic status, income inequality, work stress, job loss, social capital, location, and other demographic characteristics. Considers measurement and research design issues of both the individual and aggregate levels. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Social Ecology 10; Social Ecology 13 or equivalent. Same as Public Health 102. Formerly Psychology and Social Behavior P163S.

ADDITIONAL COURSES

190 Applied Statistics in Psychological Research (4). Lecture, three hours; discussion, one hour; laboratory, one hour. Covers statistical techniques used to describe and make generalizations about phenomena represented by data. Hands-on experience in data analysis and interpretation using statistical software (SPSS, STATA) is emphasized. Topics include data visualization, ANOVA, multiple regression, and categorical data analyses. Prerequisite: Social Ecology 13 or equivalent. Formerly Psychology and Social Behavior P190.

192A History of Psychology (4). Lecture, three hours. A history of the development of various schools and systems of psychological thought. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent, or consent of instructor. Same as Psychology 120H. Formerly Psychology and Social Behavior P192A.

192E Perception and Sensory Processes (4). Lecture, three hours. A general introduction to the scientific study of sensory processes and perceptual phenomena, with special emphasis on the visual system. Prerequisite: Psychology and Social Behavior 9 or 11A, or Psychology 7A or 9A, or equivalent, or consent of instructor. Psychology 130A may not be taken for credit if taken after Psychology 131A or 131B. Same as Psychology 130A. Formerly Psychology and Social Behavior P192E.

192G Cognitive Science (4). Lecture, three hours. Introduction to investigations of the structure and function of the mind, from viewpoints of computation, neuroscience, philosophy, and cognitive psychology. Topics include: perception, attention, knowledge representations, learning and memory, action, reasoning, and language. Prerequisite: Psychology and Social Behavior 9 or 11A, 11B or Psychology 7A or 9A, 9B or equivalent. Same as Psychology 140C. Formerly Psychology and Social Behavior P192G.

192I Principles of Learning Theory (4). Lecture, three hours. Investigation of the learning and memory processes of humans and animals. Basic experimental approaches to learning and memory, empirical results, and theoretical interpretations of the evidence are discussed. Prerequisite: Psychology and Social Behavior 9 or 11A, or Psychology 7A or 9A, or equivalent. Same as Psychology 140L. Formerly Psychology and Social Behavior P192I.

192J Human Memory (4). Lecture, three hours. Developments in the area of memory; history of memory research; theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, relationship of memory to thinking. Selected theoretical formulations for memory. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Psychology 46A may not be taken for credit concurrently with Psychology 140M or Psychology and Social Behavior 192J. Same as Psychology 140M. Formerly Psychology and Social Behavior P192J.

192K Human Problem Solving (4). Lecture, three hours. Modern developments in the psychology of human problem solving. Topics include: concept identification, arithmetic, sets, logic puzzles, story problems, group problem solving, and theorem proving. Prerequisite: Psychology and Social Behavior 9 or 11B, or Psychology 7A or 9B, or equivalent. Same as Psychology 143P. Formerly Psychology and Social Behavior P192K.

192L Introduction to Cognitive Neuroscience (4). Lecture, three hours; discussion, one hour. Introduction to the neural basis of human perceptual, motor, and cognitive abilities. Topics include sensory perception, motor control, memory, language, attention, emotion, frontal lobe function, functional brain imaging, and neuropsychological disorders. Prerequisite: Psychology and Social Behavior 9 or 11A, B, or Psychology 7A or 9A, B, or Biological Sciences 35, or consent of instructor, or equivalent. Same as Psychology 160A and Biological Sciences N166. Formerly Psychology and Social Behavior P192L.

192P Perceptual Neuroscience (4). Lecture, three hours; discussion, one hour. Examines the physiology of cortical networks underlying human perceptual experience. Prerequisite: Psychology and Social Behavior 192L or Psychology 160A or consent of instructor. Same as Psychology 161P. Formerly Psychology and Social Behavior P192P.

192Q Chicano/Latino Social Psychology (4). Lecture, three hours. Examines theories, research, and major issues of relevance to understanding social psychological processes in Chicano/Latino populations. Topics include social development, cultural orientations, gender and sexuality, close relationships, happiness and well-being, stereotyping, prejudice and discrimination, and mental and physical health. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Chicano/Latino Studies 168. **(VII)**

192R Culture and Close Relationships (4). Seminar, three hours. Examines cultural influences on close relationship processes including attraction, love, friendship, family, social support, and significance of close relationships for health and well-being. National and ethnic sources of cultural variation examined include Latin America, Asia, Africa, and the Middle East. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Chicano/Latino Studies177. **(VIII)**

192S Health and the Latino Paradox (4). Seminar, three hours. Examines research and theories concerning the physical and mental health of U.S. Latino populations. Contemporary accounts, health care implications, and new directions for understanding sources of risks and resilience for health in Latino populations are evaluated and discussed. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Chicano/Latino Studies 178. **(VII)**

192T Cognition and Learning in Educational Settings (4). Lecture, three hours. Foundational concepts in cognition and development as applied to student learning. Primary topics include historical behaviorism, basic cognitive structure and processes, complex cognition, cognitive development, and motivation. Same as Education 173. Formerly Psychology and Social Behavior P192T.

192U Psychology of Learning, Abilities, and Intelligence (4). Lecture, three hours. Overview of classic positions on the mind, human abilities, and intelligence, especially as related to academic achievement. Contrasting views: psychometric versus information processing; experimental versus correlational research. Prerequisite: introductory course in psychology, or consent of instructor. Same as Education 176. Formerly Psychology and Social Behavior P192U.

192V Language and Literacy (4). Lecture, three hours. Addresses the linguistic principles and processes that underlie oral and written language proficiency. Emphasis is on how to use phonology, morphology, orthography, semantics, syntax, and pragmatics to support literacy and oral language development for K–12 students. Same as Education 151. Formerly Psychology and Social Behavior P192V.

193B Juvenile Delinquency (4). Lecture, three hours. Patterns of delinquent behavior, theories that explain behavior, current research aimed at enhancing exploratory power. Attempts to prevent and control delinquency are put in historical perspective. Development of the current juvenile justice system and evolution of modern juvenile law. Prerequisite: Criminology, Law and Society C7. Same as Criminology, Law and Society C109.

193C Social Control of Delinquency (4). Lecture, three hours. Assumes familiarity with theories of delinquency, the juvenile justice system, and elements of juvenile law. Explores socio-historical origins and evolution of juvenile justice, current research and policy on delinquency prevention and treatment, and future directions of law, policy, and practice. Prerequisite or corequisite: Criminology, Law and Society C7; Criminology, Law and Society C109 recommended. Same as Criminology, Law and Society C164.

193D Interrogation, Confession, and the Law (4). Lecture, three hours. In-depth examination of the social psychology of police interrogation in America, the evolution of American interrogation practices from the nineteenth century to the present, impact of law on police behavior and ideology, causes and consequences of false confessions, possibilities of reform. Same as Criminology, Law and Society C152. Formerly Psychology and Social Behavior P156S.

193E Psychology and the Law (4). Lecture, three hours. Psychological assumptions of American legal system and mental health aspects of provision of criminal justice services. Civil commitment, insanity defense, competence to stand trial, jury selection, eye-witness identification. Use of police, courts, correctional institutions in prevention of behavior disorders. Prerequisite: Criminology, Law and Society C7 or C101. Same as Criminology, Law and Society C105. Formerly Psychology and Social Behavior P164S.

193F Family Law (4). Lecture, three hours. Examines legal issues surrounding marriage, cohabitation, divorce, child custody and support, adoption, and the rights of parents and children in the family context. The findings of social science research are used to illuminate the legal issues. Prerequisite: Criminology, Law and Society C7 or C101. Same as Criminology, Law and Society C123. Formerly Psychology and Social Behavior P169P.

193G Eyewitness Testimony (4). Lecture, three hours. Faulty eyewitness testimony is a major cause of wrongful convictions. Covers the fast-growing topic of eyewitness testimony and memory for real-world events, both how psychologists study eyewitness capacity, and how the legal system has dealt with eyewitness issues. Prerequisites: Social Ecology 10 and senior standing. Same as Criminology, Law and Society C177. Formerly Psychology and Social Behavior P177P.

196 Research Seminar in Psychology and Social Behavior (4). Seminar, three hours. Special topics research seminar. Content varies with interest of instructor. Capstone seminar for students who have conducted research with, or have a background in, the research topics of the Psychology and Social Behavior faculty member offering this seminar in a given quarter. Prerequisites: Psychology and Social Behavior 11C, upper-division standing, and consent of instructor. May be repeated for credit as topics vary. Formerly Psychology and Social Behavior P196.

GRADUATE PROGRAMS

Graduate training in the School of Social Ecology is organized around the study of contemporary problems in the social and physical environment. Emphasis is placed primarily upon theory and research that have implications for policy and intervention. Problems are investigated from the complementary perspectives of a multidisciplinary faculty that includes specialists in social, developmental, clinical, environmental, and health psychology; urban and regional planning, public policy, and architecture; urban sociology; law and society; criminology; and public health.

Among issues of long-standing interest in the School are crime and justice in society, social influences on health and human development over the life course, and the effects of the physical environment on health and human behavior. The graduate curriculum emphasizes an interdisciplinary orientation, training students to draw upon the knowledge offered by several of the traditional academic fields in order to examine important social, legal, and environmental problems from a perspective of breadth as well as depth.

The School offers M.A., M.A.S., M.U.R.P., and Ph.D. degree programs. Doctoral students have the opportunity to pursue an individualized course of study in the principles and methods of social ecology for the Ph.D. in Social Ecology, a concentration in Epidemiology and Public Health, or a concentration in Environmental Analysis and Design. Additional degree programs offered are as follows: Ph.D. in Criminology, Law and Society; Ph.D. in Planning, Policy, and Design; and Ph.D. in Psychology and Social Behavior. Master's degrees include the M.A. in Social Ecology; the M.A. in Social Ecology with a concentration in Demographic and Social Analysis; the Master of Advanced Studies (M.A.S.) in Criminology, Law and Society (an online degree program); and the Master of Urban and Regional Planning (M.U.R.P.). In addition, many students in the Ph.D. programs in Criminology, Law and Society and in Psychology and Social Behavior obtain an M.A. in Social Ecology on the way to their Ph.D.

Social Ecology faculty members apply diverse methods of scientific inquiry to study social, behavioral, and environmental problems. Evaluation research, legal research, questionnaire and survey methods, field research, naturalistic observation, and quasi-experimental techniques receive emphasis along with behavioral laboratory experimentation. Collaborative research with faculty members is an important component of graduate education in the School.

A sampling of faculty research and teaching interests includes human stress; health promotion; biobehavioral bases of health and illness; program evaluation; economic change and behavioral disorders; atypical child development; adaptive aging; end-of-life medical decision-making; violence and aggression; legal sanctions and deterrence; the socio-cultural context of law; white-collar and organized crime; gangs; police work; wrongful conviction/miscarriages of justice; transitions to parenthood; personality and psychopathology; effects of chemical and social environments on early child development; urban growth management and policies; transportation policies; poverty and homelessness; community design and development; regional economic development; the use of scientific information in public policy formation and litigation; and the health impacts of work environments.

ADMISSION

Students should submit their complete application file including the application form, transcripts, three letters of recommendation, and Graduate Record Examination (GRE) scores by December 15 if they are applying to the Department of Psychology and Social Behavior, or by January 15 if they are applying to the Department of Criminology, Law and Society, or the Department of Planning, Policy, and Design. The deadline for the M.A.S. in Criminology, Law and Society is in April and specific deadline information is available from the Graduate Coordinator for the Department of Criminology, Law and Society; telephone (949) 824-1442. Call the Graduate Student Services Office for additional information; telephone (949) 824-5918.

NOTE: Admission is not available to programs previously offered by the Department of Environmental Health, Science, and Policy.

CAREER OPPORTUNITIES

Ph.D. graduates enjoy a wide variety of career opportunities and have succeeded in obtaining positions in academic institutions such as Stanford University; Rutgers University; Johns Hopkins University; Temple University; University of California, Los Angeles; University of California, San Diego; University of Colorado; University of Kansas; University of Minnesota; University of Oregon; University of Wisconsin; Indiana University; Carnegie-Mellon University; University of Texas at Austin; Arizona State University; and City University of New York. Other graduates have established research and administrative careers in government agencies and private firms throughout the United States and Canada, including National Institutes of Health; Toronto Department of Public Health; Environmental Protection Agency; Centers for Disease Control; Food and Drug Administration; U.S. Department of Agriculture; Metropolitan Water District; Air Resources Board; Orange County Department of Health Services; United Cerebral Palsy Foundation; Philadelphia Geriatric Center; New Mexico Tumor Registry; Orange County Superior Court; Southern California Metropolitan Water District; and in marketing and research firms such as the Yankelovich Group and McGuire Environmental Consultants. Master of Urban and Regional Planning graduates are employed in top urban planning consulting firms and in cities and counties throughout California and beyond.

Master's Programs

M.A. IN SOCIAL ECOLOGY

The M.A. degree in Social Ecology option is available to those students who have been admitted to one of the Ph.D. degree programs in Criminology, Law and Society; Psychology and Social Behavior; or Planning, Policy, and Design. In very rare circumstances a student may be admitted directly to the M.A. degree program in Social Ecology. Consult with the Graduate Student Services Office before submitting an application or for additional questions; telephone (949) 824-5918.

Each M.A. degree student is assigned a faculty advisor with whom the student discusses an individual program of education. The M.A. degree program in Social Ecology requires a thesis and satisfactory completion of seven approved courses (28 units), including the Seminar in Social Ecology (Social Ecology 200), Research Methods (C201, P201, U297, or equivalent), and at least one additional approved course in statistics or methodology. Other courses should be selected with regard to the student's academic and career objectives, and must be approved by the faculty advisor. The seven required courses must include at least five graduate courses and must be exclusive of any directed study, independent study, or thesis courses (Social Ecology 298, 299, or 295). A grade of B or better must be achieved in all courses. Students are advanced to candidacy for the M.A. degree, and a thesis committee is appointed, after a review of their graduate work and thesis plans by a faculty committee.

M.A. IN SOCIAL ECOLOGY WITH A CONCENTRATION IN DEMOGRAPHIC AND SOCIAL ANALYSIS

The M.A. in Social Ecology with a concentration in Demographic and Social Analysis offers training in the practical research skills needed to address analytical problems confronting society, business, government, and the nonprofit sector. The concentration emphasizes the Pacific Rim and issues defining Southern California's population, such as immigration, changing household and family structure, racial and economic inequalities, and the impact of local and regional population growth. Informed by the interdisciplinary field of demography, the program draws on faculty and courses in the Schools of Social Ecology and Social Sciences.

The concentration in Demographic and Social Analysis offers the option of additional professional certification for doctoral students already admitted to the School of Social Ecology. Admission, core course, and thesis requirements are identical to those for the general M.A. in Social Ecology. In addition, students must complete 12 units of designated electives in population issues or research methods. Up to two upper-division undergraduate courses may be approved to fulfill the elective requirement. Students interested in this concentration should call the Graduate Counseling Office at (949) 824-5924 for more information.

M.A.S. IN CRIMINOLOGY, LAW AND SOCIETY

The Master of Advanced Study (M.A.S.) in Criminology, Law and Society, the first online degree program of its kind in the University of California system, prepares professionals for leadership positions in the criminal justice and legal communities. The curriculum emphasizes theoretical and practical applications on topics that are central to crime and its control, social policy, and the law. In keeping with one of the main tenets of the School of Social Ecology, faculty and students approach topics from a multidisciplinary perspective.

This program is ideally suited for professionals interested in or working in the criminal justice or legal fields who are seeking a graduate degree for career advancement. The program consists of 52 units of course work completed over a two-year period (six quarters) plus a one-week in-residence requirement during the first summer. In lieu of a thesis, students are required to take a capstone course in the winter quarter of the second year of study. A degree is awarded upon completion of 10 required courses, plus three elective courses. One traditional face-to-face course taken on the UCI campus, in an accelerated format (five days), is required at the beginning of a student's course of study, with the remaining courses all completed online.

MASTER OF URBAN AND REGIONAL PLANNING

The Master of Urban and Regional Planning (M.U.R.P) provides students with a rigorous intellectual foundation and critical analytical skills that prepare them to work as public, private, and nongovernmental planners. The program is fully accredited by the national Planning Accreditation Board and has 17 core full-time faculty. Students gain knowledge of planning problems and practices through a series of courses related to the environmental, economic, and social challenges in Southern California, and the United States, as well as other national contexts.

A total of 72 graduate units are necessary to satisfy the Master's degree requirements—40 units of core courses and 32 units of elective courses—and successful completion of a professional report or comprehensive examination. A normal course load is 12 units per quarter (three courses), which enables students to complete the degree in two years. Required core courses are History of Urban Planning (U202), Theoretical Foundations of Planning (U203), Microeconomics for Policy Analysis (U206), Qualitative Analysis for Planners (U214), Professional Report (U292), and two quarters of Planning Studio (U280A-B). Students are required to take three additional courses from the subject areas of methods, law, and urban settlements, selected from a menu of approved courses to satisfy this requirement.

Students complete eight elective courses to develop an area of expertise within a substantive area of urban and regional planning practice. Some examples of areas of concentration include affordable housing, international development planning, environmental planning, health and social service planning, and economic development, regional growth management, state and municipal governance, community mobilization, urban design and transportation planning. Students work with faculty members to define their concentration and identify appropriate electives. Elective courses should be selected from within as well as outside the Department of Planning, Policy, and Design.

The program supports a diverse set of educational opportunities for master's students. Students are eligible to apply to the Housing Fellows Program and Community Scholars Program. Students are also encouraged to incorporate an international educational experience as part of their degree either through the University of California's Education Abroad Program (EAP) or the Network for European and U.S. Regional Urban Studies program (NEURUS). Practical experience in planning in the form of part-time planning internships is also encouraged.

The range of employment opportunities for planners in the public, private, and non-governmental sectors is expanding due to rapid urbanization, rising concerns over environmental issues, and increases in social inequality. Career paths exist in government agencies dealing with urban planning, economic development, transportation, regional growth management, air quality, water treatment, and public utilities. Employment possibilities also exist with private consulting firms specializing in environmental impact assessment as well as residential and commercial development firms. Finally, planners are increasingly pursuing meaningful careers in the growing non-governmental or third sector. These career opportunities include working with environmental and conservation organizations, community-based organizations, advocacy groups, and labor unions.

Concurrent Master's Degree Program with Civil and Environmental Engineering

The Department of Planning, Policy, and Design (PPD) and the Department of Civil and Environmental Engineering (CEE) in The Henry Samueli School of Engineering offer a concurrent degree program that allows students to earn both a master's in Civil Engineering (M.S.) and a master's in Urban and Regional Planning (M.U.R.P.) in two years (instead of more than three years if these degrees were pursued sequentially). The concurrent degree program requires 72 units of study and is organized around two tracks: (1) transportation systems, and (2) environmental hydrology and water resources. The program core comprises 15 graduate courses for the transportation systems track, and 13 graduate and two undergraduate courses for the environmental hydrology and water resources track.

Students choose between a thesis option and a comprehensive examination option. The thesis option requires completion of 72 units of study (eight of which may be taken in conjunction with the thesis research); completion of an original research project and the writing of a thesis to describe it; completion of required core courses; and completion of enough units of approved electives to meet the total requirement of 72 units. The comprehensive examination option also requires completion of 72 units of study as well as a professional report, which represents a substantial piece of planning practice, as the capstone event. These units of study include core courses and enough units of approved electives to

meet the total requirement of 72 units, with no redundancy of core courses in either PPD or CEE. Electives may include as many as eight units of independent study or approved undergraduate courses.

Undergraduates seeking admission to the concurrent master's degree program should have a strong record of course work in disciplines related to civil engineering and urban planning, and they must meet the requirements for admission in both departments. For more information about these requirements, see http://www.eng.uci.edu/cee/grad/requirements, and http://www.seweb.uci.edu/ppd/admissions.uci.

Ph.D. Programs

The doctoral programs offered by the School of Social Ecology prepare students for academic careers in research and teaching. Graduates also are well qualified for employment in private or government agencies, where they can bring advanced academic training, strong methodological and statistical skills, and special expertise to such issues as environmental design; urban and regional planning; criminal justice; and social policies affecting mental and physical health across the life course. The normative time for completion of the Ph.D. degree is either five or six years, depending upon the specific program.

Each incoming Ph.D. student is assigned a faculty advisor with whom the student should meet at least once every quarter to discuss an individualized program of graduate education.

A student may be formally advanced to candidacy for the Ph.D. degree when all requirements except the dissertation have been completed, and when the student's dissertation plan has been approved by the candidacy committee appointed by the School of Social Ecology, on behalf of the Dean of the Graduate Division and the Graduate Council. The student will appear before this committee for an oral examination. The dissertation plan will include a thorough examination of the history of the problem being proposed for investigation, its current status, the way in which the proposed research will further knowledge, a detailed specification of the proposed method of investigating the problem, and a description of the planned methods for analyzing the data collected. The normative time for advancement to candidacy is either three or four years, depending upon the program. In no case will students be allowed to advance to candidacy after the end of their fifth year of study.

Formal advancement to candidacy for the Ph.D. degree will be approved by the Dean of the Graduate Division upon recommendation by a unanimous vote of the student's candidacy committee. Alternatively, the committee may recommend a course of action to strengthen the student for advancement to candidacy at a future date. When the student is advanced to candidacy, a doctoral committee will be appointed on behalf of the Graduate Council. The doctoral committee, ordinarily consisting of three members of the faculty, will supervise the preparation and completion of the doctoral dissertation. The dissertation should be completed and accepted within one to two years, and no later than three calendar years after the student's advancement to candidacy.

All Ph.D. students who have not been advanced to candidacy will be formally evaluated by members of the Social Ecology faculty at the end of each year. At that time, the faculty may recommend that the student continue toward the Ph.D. degree, complete the M.A. degree only, or cease graduate studies in the School. A negative evaluation at this point is evidence of failure to maintain satisfactory academic progress. Evaluation of Ph.D. students who have advanced to candidacy is the responsibility of the student's doctoral dissertation committee.

Ph.D. IN SOCIAL ECOLOGY

The Ph.D. program in Social Ecology allows students to develop a tailored course of graduate study that draws upon the knowledge of several traditional academic disciplines. This is a small distinguished program intended for genuinely interdisciplinary doctoral students. The emphases of this training program are in keeping with the academic mission of the School, namely, its emphases on an ecological approach to research and policy, an interdisciplinary approach to research and community intervention, and the application of theory and research to community problem solving. Students are encouraged to integrate the diverse theoretical and methodological insights of several disciplines in order to analyze important social and environmental problems from a perspective of breadth as well as depth. In doing so, students gain familiarity with the classic and contemporary literature in social ecology and with the application of the ecological paradigm, as it has evolved in the natural and behavioral sciences. This program is ideally suited for independent students who wish to develop a unique interdepartmental program of study in consultation with faculty from several departments. Students may elect to concentrate their interdisciplinary studies in the area of Epidemiology and Public Health, which is conducted in collaboration with faculty from the School of Medicine.

Each incoming student takes Seminar in Social Ecology (Social Ecology 200), Research Methods (C201, P201, U297, or equivalent), two approved quarters of graduate-level statistics, one additional approved research methods course, and six elective courses, chosen in consultation with the faculty advisor. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years. Students are encouraged to become involved in research in their first year of study by participating in the research projects of the faculty. Students complete a supervised research project before they begin work on their doctoral dissertation. Research is broadly construed to include experimental methods, questionnaire and interview studies, systematic field observation, secondary analyses, and legal analyses. This predissertation research project should be completed during the second year in residence and must be evaluated and approved by a committee of three faculty members. Those students pursuing the Epidemiology and Public Health concentration must select six electives in epidemiology and public health, in consultation with their advisor, from the following list: E225, E226, E227, E248, E250, E251, Epidemiology 205, Epidemiology 244 (same as Public Health 276), Social Ecology 261, and Social Ecology 275.

Students complete the breadth requirement during their third year of study. This is accomplished through successful completion of either a written comprehensive examination or the submission of a major paper or series of papers that intensively examine specific substantive problems and bodies of research. Preferably, the perspective taken should be multidisciplinary, but a single disciplinary approach is acceptable if it is more congruent with the student's educational goals and is acceptable to the student's committee. Each student's plans for completing the breadth requirement are developed in collaboration with a committee of three Social Ecology faculty members. Students are encouraged to meet with this committee as early as possible during their graduate career and are required to do so no later than the third quarter of their second year. When the student's plans have been approved and implemented, the examining committee will determine whether the breadth requirement was successfully completed, and will recommend additional academic work if it is deemed necessary. The normative time for advancement to candidacy is three years. The fourth, and possibly fifth, years of study are devoted to developing and defending a dissertation proposal and conducting dissertation research.

Ph.D. IN SOCIAL ECOLOGY WITH A CONCENTRATION IN ENVIRONMENTAL ANALYSIS AND DESIGN

The doctoral concentration in Environmental Analysis and Design prepares students to conduct research on questions of vital importance to professionals in environmental analysis and evaluation and on related questions on the formulation of environmental and health policy. These questions reflect an overarching concern with the effects of the natural and built environments on the health and social well-being of humans.

This doctoral concentration particularly focuses on insights from a social ecological perspective. One of the concentration's strengths is its research sequence which spans the disciplines within the School. Students are encouraged to take classes across the campus to improve their knowledge of related fields as well.

Students conduct analyses of sociocultural, behavioral, biological, chemical, and physical factors that influence health and well-being of humans, including public and private sector policy as well as the environment as a whole. They are also trained to evaluate the effectiveness of interventions designed to enhance the health of individuals and the community as a whole. The curriculum and diversity of faculty within the concentration afford unique opportunities for multidisciplinary research and training.

Potential employment sources for graduates include academic and research institutions; state and federal agencies; policy-making organizations; national, community, and workplace health-promotion programs; and a diverse range of consulting firms ranging from engineering to design.

Each incoming student takes the five core courses required of most Ph.D. students, noted earlier, and eight elective courses drawn from the focal areas within this concentration. The elective courses cover topics such as environmental health risks, behavioral epidemiology, demography, and technological hazards and change. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years. Students are expected to become involved in research activities in their first year of graduate study. Students complete a supervised research project before they begin work on their doctoral dissertation. This predissertation research project should be completed during the second year in residence (preferably by the end of the winter quarter of the second year). The research project must be evaluated and approved by a committee of three faculty members. Students complete the breadth requirement, described earlier, during their third year of study. The normative time for advancement to candidacy is three years. The fourth and fifth years of study are devoted to developing and defending a dissertation proposal and conducting dissertation research.

Ph.D. IN CRIMINOLOGY, LAW AND SOCIETY

The study of crime, institutional responses to illegal behavior, and the interaction of law and society are the foci of the doctoral program in Criminology, Law and Society. Students examine issues related to the etiology of crime, the process of changing criminal behavior, social regulation, the civil justice system, and the social and cultural context of law.

Students gain familiarity with a number of subjects including sentencing; crime rates; modes of modifying criminal behavior; police behavior; white collar and organized crime; policies against hate crimes; behavior of courts, juries, and regulatory agencies; environmental law; immigration lawmaking; Native American justice issues; and the interaction among law, culture, and identity. In general, students are introduced to the leading classical and contemporary issues in criminology, law and society and to ways of understanding them through interdisciplinary research. The program aims to develop theoretical sophistication and to prepare the graduate student for faculty positions at major universities; and for research and administrative work in institutions in the legal system, the criminal justice system, and related organizations.

In addition to the four core courses required of most Ph.D. students (Social Ecology 200, two additional quarters of graduate-level statistics, and one additional approved research methods course), students take at least five required courses, Research Methods (C201), Crime and Public Policy (C230), Theories of Crime (C235), Legal Reasoning (C237), and Law and Society (C239), and three elective courses in Criminology, Law and Society. These elective courses should be chosen in consultation with the student's faculty advisor. Students become involved in research activities from the earliest stages of their training and complete an independent, supervised research project during the second year of graduate study. Methods of research may include questionnaires and surveys, systematic field observation, computer simulation, legal analyses, and archival research. Students complete a written comprehensive examination during year three, which requires them to demonstrate mastery of major theoretical, substantive, and methodological issues in criminology, law and society. The normative time for advancement to candidacy is four years (three years for students who entered with a master's degree). Students are required to advance to candidacy by the end of fall quarter of their fifth year of study, adjusted for any approved leaves of absence. The fourth and, possibly, fifth years of study are devoted to developing and defending a dissertation proposal and completing dissertation research. The normative time for completion of the Ph.D. is six years, and the maximum time permitted is seven years. (For students who have waived two required courses and the second-year project based upon master's-level work completed at another institution, the time to degree is five years, with a maximum of six years.) All Ph.D. students in the Criminology, Law and Society program are required to pass a final oral defense of the dissertation. Opportunities for field placements in legal and criminal justice settings also are available.

Ph.D. IN PLANNING, POLICY, AND DESIGN

The Planning, Policy, and Design doctorate program trains scholars to have national and international prominence in the analysis of social problems related to the built and natural environments. Faculty strengths span planning, policy, and design, and faculty are at the cutting edge of teaching and research that examines the interplay of these three currently distinct approaches.

There is a growing recognition that many pressing social problems require perspectives that combine an understanding of planning, policy process, and the built environment. For example, efforts to control transportation problems by building neighborhoods that encourage alternatives to the automobile require an understanding of travel behavior and human interactions with the built environment. Understanding how to reduce tobacco use requires an appreciation of how behavior is shaped by programmatic interventions, community settings and norms, and policy tools. Environmental cooperation across national borders often requires understanding of political processes, infrastructure systems, and metropolitan structure and governance in regions, such as the U.S.-Mexico border, where population is concentrated in urban settlements that span the border. And, issues of public safety are increasingly related to the design of public and private spaces, and how those spaces are used and regulated.

In all of these areas, public and private officials are increasingly working on topics that span the boundaries of several traditional academic disciplines. The PPD program is designed to give students a strong background in one of four specializations and thus to produce scholars and practitioners capable of responding to the complexity of problems facing contemporary society.

The PPD program offers four specializations—urban and community development, design-behavior research, environmental policy, and health promotion and policy. **Urban and Community Development** examines contemporary planning approaches to managing local, community, and regional development. Students explore the spatial dynamics of urbanization in diverse settings and how public policy can guide urban and regional growth to balance environmental and economic concerns. **Design-Behavior Research** investigates the inter-relationships of people and their socio-physical environments at all scales, from micro to macro, with emphasis on urban design and community-scale issues. The School of Social Ecology is an international leader in environment design research since the field's earliest developments. **Environmental Policy** focuses on the environment and natural resources as important policy and planning issues. A clear understanding about how politics, economics, ethics, and institutions affect planning and policy choices is the emphasis of this specialization. The School has among the largest concentrations of environmental policy faculty of any planning department in the United States. **Health Promotion and Policy** focuses on the interface between planning and community and individual health, examining the public welfare, psychological, and health implications of social and physical planning; and the techniques and goals of public health policy making.

The Ph.D. curriculum is composed of three parts: (1) Planning, Policy, and Design core (required of all students); (2) area cores (each student affiliates with one of four areas of specialization and is required to complete the core courses for that area); and (3) electives. All doctoral students take a total of 16 four-unit graduate courses, distributed across these three types of courses.

Required courses in the Planning, Policy, and Design core are Seminar in Social Ecology (Social Ecology 200); Research Design (Planning, Policy, and Design 297); two courses in research methods/data analysis chosen from among the following: Data Analysis A (Social Ecology 264A), Data Analysis B (Social Ecology 264B), and Qualitative Research Methods: Overview (Planning, Policy, and Design 209); and two courses selected in consultation with a faculty advisor that provide disciplinary/theoretical orientation.

In total, PPD students complete 72 units of study in their first two years. Participation in a faculty-supervised research project is required during the second year of study. The second year includes preparation for, and completion of, a comprehensive examination. The normative time for advancement to candidacy is four years. Following this, dissertation research begins. The normative time for completion of the Ph.D. in Planning, Policy, and Design is six years, and the maximum time permitted is seven years. All Ph.D. students in the Planning, Policy, and Design Program are required to pass a final oral defense of the dissertation.

Graduates with a doctorate degree in Planning, Policy, and Design are employed in a wide array of activities, ranging from university teaching and research, to administrative and research-oriented positions in governmental agencies, international organizations, nonprofit organizations, and private consulting practices.

Ph.D. IN PSYCHOLOGY AND SOCIAL BEHAVIOR

The Department of Psychology and Social Behavior offers a Ph.D. program in Psychology and Social Behavior. The main goal of this program is to train behavioral scientists to apply theory and methods in psychology, together with perspectives and knowledge from allied disciplines, to the analysis of human behavior and health across the life span and in diverse sociocultural contexts. This program values both basic and applied research that is relevant to the improvement of individual, community, and societal functioning. Emphasis is placed on the integration of knowledge from several subspecialties in psychology in order to understand the antecedents and developmental course of adaptive or maladaptive behavior and on the conduct of research that has implications for social policies, programs, and interventions.

Training in this program emphasizes four core areas of psychology. The specialization in **Developmental Psychology** focuses on the development of individuals at various periods in the life course and the effects of varying social and cultural contexts on cognitive, social, and health outcomes. **Health Psychology** focuses on identifying, evaluating, and enhancing the psychosocial and behavioral factors that promote mental and physical health, prevent disease, and optimize medical treatments. The specialization in **Psychopathology** focuses on psychological, biobehavioral, and social environmental mechanisms that influence the development, expression, and amelioration of psychopathology and behavioral disorder. **Social and Personality Psychology** focuses on the interrelations among attitudes, perceptions, motives, emotions, and personality characteristics as they affect individual functioning, interpersonal processes, and intergroup relations. In addition, several faculty offer courses and conduct research in the area of **Psychology and Law**, dealing with such issues as the malleability of memory processes, the ability of jurors to understand scientific evidence, the impact on children and adolescents of contact with the legal system, and the response of the legal system to individuals with severe personality disorders.

Students will learn to understand human behavior from a social ecological, contextual perspective. They will be exposed to the major theories in each specialization and learn various social science research methods. All students are encouraged to become actively involved in research from the earliest stage of their training. Through close association with faculty members and participation in the faculty's research projects, students learn to conduct methodologically sophisticated research that addresses contemporary psychological and social issues. Current research teams are investigating stress, coping, and social support; biobehavioral mechanisms of cardiovascular reactivity; psychobiology of stress; personality factors that increase resilience to health threats; parent-child relations; work and family; transitions across the life course; adaptive aging; end-of-life medical decision making; culture and adolescent psychosocial development; cultural influences on social judgment; relations between cognitive and emotional development; emotion regulation; memory and eyewitness testimony; violence and anger management; the development of health-risking and health-protecting behaviors during childhood and adolescence; economic stress and psychopathology/behavioral disorders; health impacts of environmental stressors; mental health and psychopathy; juvenile and criminal justice; positive psychology; and person-environment fit.

All students take eight required core courses: Seminar in Social Ecology (Social Ecology 200), Research Methods in Psychology (P201), Quantitative Methods in Psychology (P264A), Advanced Quantitative Methods in Psychology (P264B), an additional research methods/data analysis course from an approved list, Applied Psychological Research (P209A), Professional Issues in Psychology (P231), and Research Directions in Psychology and Social Behavior (P294A-B-C). The course on Applied Psychological Research (P209A) introduces students to the scientific, professional, and ethical issues involved in conducting and translating psychological research in a variety of applied settings. Some students may wish to take a complementary (optional) course, Applied Psychological Research in Community Settings (P209B), that provides the opportunity for a supervised research internship in an appropriate community setting. The three-quarter course Research Directions in Psychology and Social Behavior (P294A-B-C) allows students to increase their breadth of knowledge regarding contemporary issues and controversies in psychology and social behavior by participating in the Department's weekly colloquium series and interacting with visiting scholars and other speakers.

Students must select one of four core specialization areas in which to further focus their graduate training. Additional course requirements vary across each specialization. For the Health Psychology specialization, Health Psychology (P258) is required, along with two of the following three courses: Health, Stress and the HPA Axis (P272; formerly titled "Psychoneuroendocrinology"), Biobehavioral Bases of Health and Illness (P273), and Psychobiology of Stress (P274). For the Social and Personality specialization, Social Psychology (P214), Personality (P233), and two additional courses from an approved list are required. For the Psychopathology specialization, the following three courses are required: Child Psychopathology (P238), Adult Psychopathology (P239), and Psychological Assessment (P245). In addition, one of the following two courses is required: Mental Health Services and Intervention (P241) or Ecological Context of Behavioral Disorder (P243). The Developmental Psychology specialization requires Developmental Psychology (P220), two life-span courses, plus one additional course from approved developmental electives.

In addition to selecting a core specialization area, students are also required to select a minor specialization and complete one required specialization course and one elective course in this area. The minor specjalization and elective courses should be chosen according to the plan that best meets the needs of the individual student, as determined in consultation with the student's faculty advisor and the departmental graduate advisor. In addition to courses offered by the Department of Psychology and Social Behavior and the School of Social Ecology, students may take courses offered by other departments in other schools such as the Departments of Cognitive Science, Anthropology, and Sociology in the School of Social Sciences and the Department of Neurobiology and Behavior in the School of Biological Sciences. Approval from instructors is required to enroll in these courses.

Finally, students who are interested can pursue an optional training track in psychology and law. This track is supplemental to the requirements associated with the required specializations and supplemental to the required minor. That is, all students must complete the above-listed requirements for their specialization and minor. Then, if the student decides to complete the training track in psychology and law, this training is in addition to the requirements listed above. For the training track, a total of four courses must be taken, three required and one elective. The required courses include Social Science and the Legal Process (C245), Psychology and Law (P266), and Legal Reasoning (C237). The elective must be approved by the student's faculty mentor and departmental advisor and can be a course in PSB, or in the School Social Ecology or School of Law, with instructor and school approval.

Students complete a supervised research project during their second year culminating in a paper that may form the basis for a publication. They take a written comprehensive examination during their third year, which requires them to demonstrate mastery of the principles of social ecology and of major theoretical, substantive, and methodological issues in the study of their major and minor specializations and in the psychology of human behavior. The normative time for advancement to candidacy is four years. The fourth year is devoted to developing and defending a dissertation proposal, and the fifth year is spent completing the dissertation research. The normative time for completion of the Ph.D. is six years. Students must complete all requirements for the Ph.D. in Psychology and Social Behavior no later than their seventh year of study, adjusted for any approved leaves of absence that may have been taken. It is expected that most students will complete the degree requirements well in advance of this deadline. All Ph.D. students in the Psychology and Social Behavior program are required to pass a final oral defense of the dissertation.

Potential employment sites for graduates of the program include academic institutions, research organizations, government policy institutes, health care and human services settings (e.g., hospitals, schools, community agencies), and a variety of private sector employers. The Ph.D. Program in Psychology and Social Behavior specializes in the training of researchers, not in the training of clinical practitioners.

Graduate Courses

SOCIAL ECOLOGY

***(Schedule of Classes* designation: SocEcol)**

200 Seminar in Social Ecology (4). Students are introduced to the classic and contemporary literature of human and social ecology and are expected to use the ecological paradigm to analyze social phenomena of interest to the differing subprograms.

250 Environmental Policy and Global Sustainability (4). Seminar organized around four transcendent questions: does the world value sustainability, what challenges must be met to move toward it, what are the roots of inequality, and is capitalism compatible with sustainability. Prerequisite: graduate standing or consent of instructor. Same as Public Health 241.

261 Strategies of Theory Development (4). The goals are (1) to examine key issues and controversies facing the development of social ecological theory, and (2) to encourage students to develop their own abilities as theorists. Strategies for enhancing creative hypothesis formation are emphasized.

264A-B Data Analysis (4). Provides an appreciation and understanding of statistics necessary to conduct applied research. Topics include approaches to and presentation of data, robust statistics, standardization techniques, multivariate regression, and analysis of variance. Prerequisite: graduate standing or consent of instructor.

266B Applied Logistic Regression (4). Develops statistical models to be used where the dependent variable is dichotomous. Applications to be considered include cohort and ease-control analyses. Prerequisites: Social Ecology 264A-B or consent of instructor.

266D Analysis of Survival Data (4). Provides an introduction to survival analysis methods for the analysis of change in discrete dependent variables. Focuses on data collection strategies for obtaining longitudinal data and continuous-time hazards models. Communicates the variety and power of multivariate hazard models.

266E Applied Longitudinal Data Analysis (4). Longitudinal data feature measurements over a continuum and are often conceptualized as a trajectory describing the evolution of the response "over time." Course emphasizes use of the linear mixed model for the analysis of normally distributed, longitudinal responses. Prerequisites: Social Ecology 264B or Psychology and Social Behavior P264B or equivalent; graduate standing.

272A Structural Equation Modeling I (4). The general structural equation model is developed including path models, recursive and nonrecursive structural models, multiple indicator models, and confirmatory factor models. Use of LISREL and other software for estimating model parameters is covered. Prerequisites: Social Ecology 264A-B or consent of instructor. Formerly Social Ecology 266A.

272B Structural Equation Modeling II: Longitudinal and Advanced Topics (4). Provides hands-on experience with longitudinal and advanced structural equation models and will be of interest to students from a range of disciplines. Topics covered include confirmatory factor, latent growth curve, general growth mixture, and multi-level modeling. Prerequisite: Social Ecology 272A or consent of instructor.

275 Special Topics in Social Ecology (2 to 4). Topics covered vary with interests of the instructor. Prerequisite: consent of instructor. May be repeated for credit.

291 Program Evaluation (4). Students are introduced to the use of research techniques and statistical methods in assessing the effectiveness of social programs. Different evaluative models are discussed using examples of actual program evaluations. Prerequisites: two courses of graduate-level statistics. Intended for students in the Ph.D. program.

295 Master's Thesis Research and Writing (1 to 8). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory only.

296 Doctoral Dissertation Research and Writing (1 to 12). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory only. May be repeated for credit.

297 Field Studies (2 to 4) F, W, S

298 Directed Studies (2 to 4) F, W, S

299 Independent Study (2 to 8) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

399 University Supervised Teaching (2 to 4) F, W, S. Required of and limited to Teaching Assistants. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only.

CRIMINOLOGY, LAW AND SOCIETY

***(Schedule of Classes* designation: Crm/Law)**

C201 Research Methods (4). An introduction to techniques of inductive methodologies, including qualitative interviewing and participant observation, and deductive methodologies, including survey research and experimental and quasi-experimental design. Provides a sound overview of research methodology with tools to pursue specific methods in greater design. Prerequisite: graduate standing or consent of instructor.

C207 Development Control Law and Policy (4). Investigates legal and institutional frameworks for development control. Review of constitutional issues implicated in land-use regulation. Traces development control historically and analyzes contemporary approaches to land-use control which reflect environmental and economic development concerns. Prerequisite: graduate standing. Same as Planning, Policy, and Design 207.

C210 Introduction to Criminology, Law and Society (4). Familiarizes students with the interrelated fields of criminology, law and society studies, and criminal justice studies. Organized around three well-established interdisciplinary literatures: criminology, sociolegal studies, and criminal justice studies. Prerequisite: graduate standing or consent of instructor.

C211 Legal Institutions and Society (4). Acquaints students with the institutions of U.S. legal system and its operations, as well as with the constitutional framework undergirding this system, and defines the relationship between U.S. citizens and government at a variety of levels. Prerequisite: graduate standing or consent of instructor.

C212 Police, Courts, and Corrections (4). Focuses on basic policy issues in the administration of the criminal justice system. The key elements of the criminal justice system are police, courts, and corrections. Prepares students for continued study of these organizations. Prerequisite: graduate standing or consent of instructor.

C213 Crime and Social Deviance (4). Examines the major social scientific perspectives on criminal and deviant behavior. Specific deviant and criminal activities are described and explained using established theoretical frameworks. Prerequisite: graduate standing or consent of instructor.

C214 Research Methods (4) Structures research methodology, the approach to developing and evaluating knowledge of the sciences for use in criminal justice professional activities. Special emphasis on differentiating scientific approaches from pseudo-science. Prerequisite: graduate standing or consent of instructor.

C215 Applied Statistics (4). Provides a basis for the use of fundamental statistical analysis techniques for solving public policy and management problems through a series of assignments, examinations, and online discussions and demonstrations. Prerequisite: graduate standing or consent of instructor.

C216 Public Policy, Crime, and Criminal Justice (4). Increases understanding of crime, violence, and the criminal justice system. Assesses the state of knowledge on key policy issues of our time. Discusses the contribution of communities, schools, employment, drugs, guns, and alcohol to crime and violence. Prerequisite: graduate standing or consent of instructor.

C217 Leadership (4). Introduces concepts, ideas, and theories about leadership and its operation. Explores leadership concepts through interviews with leaders from the community and fellow classmates. Prerequisite: graduate standing or consent of instructor.

C218 Social Problems, Law, and Policy (4). Capstone course for the M.A.S. program in Criminology, Law and Society. Students choose a social problem related to crime, criminal justice, and law; relate the problem to legal and social issues; and devise a plan of action to research the problem. Open to M.A.S. students only.

C219 Hate Crime (4). Examines the causes, manifestations, and consequences of hate crimes, as well as the larger social context within which they occur, are reacted to, and seem to be proliferating. Prerequisite: graduate standing or consent of instructor.

C221 Sentencing and Corrections (4). Reviews U.S. attempts to punish and rehabilitate convicted law violators. Conflicts among major purposes of sentencing (rehabilitation, deterrence, incapacitation, and retribution) are discussed, as well as effects of different sanctions on public safety, offender rehabilitation, and justice system costs. Prerequisite: graduate standing or consent of instructor.

C222 Street Ethnography (4). Focuses on urban street populations, especially gangs, and outlines some of the major conceptual and theoretical issues related to this topic and the processes of street socialization. Methods of inquiry include mapping, ethnohistory, survey questionnaires, and other quantitative techniques. Prerequisite: graduate standing or consent of instructor. Same as Chicano/Latino Studies 217.

C224 Organizational Perspectives on the Legal System (4). Familiarizes students with organization theory and research as ways to make sense of, navigate, and act on the legal system. Acquaints students with major frameworks in organization theory and their application to the system of legal organizations. Prerequisite: graduate standing or consent of instructor.

C225 Consequences of Imprisonment (4). Reviews imprisonment and its consequences in the United States. Views prison and inmates as part of (rather than separate from) society. Examines the effects of prison on American society, the family, the labor market, and the community. Prerequisite: graduate standing or consent of instructor.

C230 Crime and Public Policy (4). Discusses the measurement of violent crime; violent offenders and their victims; theoretical explanations of violence; the contribution of the media, drugs, guns, and alcohol to violence; and how the justice system treats and punishes violent offenders. Prerequisite: graduate standing or consent of instructor.

C232 Juvenile Delinquency (4). Examines the major theoretical perspectives regarding the onset, persistence, and desistance of juvenile delinquency and examines empirical evidence for each perspective. Prerequisite: graduate standing or consent of instructor.

C234 Anthropology of Law (4). Law has been a key site of anthropological inquiry since the discipline's nineteenth-century origins. Course introduces and critically assesses the contributions anthropology has made to sociolegal studies, including both a historical overview and survey of contemporary analytic trends. Prerequisite: graduate standing or consent of instructor.

C235 Theories of Crime (4). Examines classical and contemporary theories of crime and crime control with special emphasis on the implications of theory for public and social action. Prerequisite: graduate standing or consent of instructor.

C236 Gender and Power in Law and Society (4). Focuses on questions of gender and sexuality in law and society studies. Drawing on a variety of theoretical frameworks, especially feminist legal theory, examines social processes and structures related to legal regulation, inequality, and social change. Prerequisite: graduate standing or consent of instructor.

C237 Legal Reasoning (4). Introduction to law and legal process; use of legal source materials; history and assumptions underlying modern legal reasoning. Key jurisprudential perspectives, development and application of constitutional doctrines (focus on equal protection and right of privacy), and procedure and evidence issues. Prerequisite: graduate standing or consent of instructor.

C238 White-Collar Crime (4). Examines the illegal behavior of individuals who commit crimes in the course of their employment. Special attention will be paid to ways in which power and organizational structure affect the behavior of the white-collar offenders. Prerequisite: graduate standing or consent of instructor.

C239 Law and Society (4). Discusses the major schools in the sociology of law from the early years to the present. Addresses the differences among the schools and locates them in their historical and intellectual context. Presents case studies, comparing the utility of these theoretical traditions. Prerequisite: graduate standing or consent of instructor.

C241 Race, Ethnicity, and Social Control (4). Origins and organization of racialized social control, with emphasis on criminal justice. Racial politics of criminal/juvenile justice considered in comparative (historical and international) perspective. Exploration of theoretical and methodological issues for research on race, ethnicity, and social control. Prerequisite: graduate standing or consent of instructor. Same as Chicano/Latino Studies 221.

C245 Social Science and the Legal Process (4). Examines the use (and misuse) of social science in the legal process, focusing on role of social science evidence in trial and appellate decision making. Test-case litigation in which social science has been used to challenge laws or support reform. Prerequisite: graduate standing or consent of instructor.

C248 Geographic Information Systems (4). Prepares students to become proficient in the basic GIS functionality including visualization, data management, and spatial analysis. Prerequisite: graduate standing or consent of instructor.

C249 Law and Morality (4). Examines major theoretical, empirical, and policy-oriented research related to the design, implementation, and analysis of government intervention, through the criminal sanction, in the spheres of vice and morality. Prerequisite: graduate standing or consent of instructor.

C251 Qualitative Criminological Analysis (4). Examines issues and strategies involved in the collection and analysis of qualitative data. Application of qualitative research methods with respect to criminology, law and society. Prerequisite: graduate standing or consent of instructor.

C252 Issues in Environmental Law and Policy (4). Treatment of legal and policy strategies for promoting environmental protection and deterring environmental degradation within the context of other societal objectives. Topical approach with a focus on problems of special interest to criminologists and to environmental policy specialists. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 252.

C255 Public Policy (4). Explores different approaches to public policy analysis, the diverse conceptions of the goals and objectives that should be served by policy, and the appropriate role of the policy analyst. Policy consequences are traced to indirect and subtle incentives and disincentives. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 221 and Political Science 221A.

C263 Eyewitness Testimony (4). Examines the evidence that shows that faulty eyewitness memory is the major cause of wrongful convictions. Explores what the legal system thinks of eyewitness testimony and how the legal system has dealt with eyewitness issues. Prerequisite: graduate standing or consent of instructor. Same as Psychology and Social Behavior P263.

C265 Memory and the Law (4). Examines the controversial topic of repressed memory, or perception and memory of real-world events. Prerequisite: graduate standing or consent of instructor. Same as Psychology and Social Behavior P265.

C275 Special Topics in Criminology, Law and Society (4). Topics covered vary with interests of instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

C296 Doctoral Dissertation Research and Writing (2 to 12). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory only. May be repeated for credit.

C298 Directed Studies (2 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

C299 Independent Study (2 to 8). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

ENVIRONMENTAL HEALTH, SCIENCE, AND POLICY

(Schedule of Classes **designation: Environ)**

E205 Coastal Ecosystem Health (4). Examines the causes of coastal ecosystem degradation and strategies to restore the ecosystem balance or to prevent further coastal ecosystem health degradation. Prerequisite: graduate standing or consent of instructor. Same as Ecology and Evolutionary Biology 275 and Public Health 260.

E224 Environmental Health Sciences I: Introduction to Environmental Health Science (4). Convergence of agents (chemical, physical, biological, or psychosocial) in the environment can emerge as diseases influenced by social, political, and economic factors, allowing them to become rooted in society. How these agents from various spheres come together and impact human health. Prerequisite: graduate standing or consent of instructor. Same as Public Health 264/Epidemiology 264.

E225 Environmental Health Sciences II: Advanced Environmental Health Science (4). Explores the complex relationships among exposure processes and adverse health effects of environmental toxins focusing on specific chemicals, sources, transport media, exposure pathways, and human behaviors. Techniques of environmental sampling for exposure assessment are discussed. Prerequisite: graduate standing or consent of instructor. Same as Public Health 265/Epidemiology 265.

E226 Environmental Health Sciences III: Epidemiology (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease in the general population, as these approaches apply to populations using different student designs and models from the literature. Prerequisite: graduate standing or consent of instructor. Same as Public Health 203/Epidemiology 203.

E227 Environmental Health Sciences V: Biostatistics (4). Designed to help students develop an appreciation for the statistician's view of the research process, emphasizing biomedical research. Instills an understanding of how statistical models are used to yield insights about the data that form evidence-based understanding of the world around us. Prerequisite: graduate standing or consent of instructor. Same as Public Health 204/Epidemiology 204.

E228 Public Health Cost-Effectiveness Analysis (4). Examines using cost-effectiveness information to allocate limited resources to maximize health benefits to a population; defining and measuring cost, survival, and health-related quality of life; and how to calculate cost-effectiveness using decision trees and Markov simulation models. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 226, Psychology and Social Behavior P228, and Public Health 220.

E229 Introduction to Biostatistics and Epidemiology for Medical Fellows (4). Designed to prepare medical fellows and other physicians for rotations in research programs. Understanding of basic biostatistics and study design, and interdependencies between the two. Application of principles in evaluation of medical literature for guidance on patient care and public health policy. Prerequisites: medical degree and consent of instructor. Same as Epidemiology 290.

E230 Environmental Hydrology (4). Provides an overview of the occurrence, distribution, and movement of water in the environment. Quantitative methods are introduced for analyzing hydrologic processes. Human impacts on water distribution and quality are considered. Prerequisite: graduate standing or consent of instructor. Same as Public Health 261.

E231 Earthquakes and Seismic Hazard (4). Provides an overview of earthquakes and introduction to seismic hazard. Topics include characteristics and effects of earthquakes, sources of earthquakes, seismic hazard assessment, introduction to earthquake loss estimation and mitigation. California examples are emphasized. Prerequisite: graduate standing or consent of instructor. Same as Public Health 262.

E232 Seminar in Paleoseismology (4). Provides an introduction to paleoseismology and its applications. Topics include data collection methods, data analysis, earthquakes in different tectonic environments, and applications to seismic hazard assessment and fault characterization. Prerequisite: graduate standing or consent of instructor. Same as Public Health 263.

E245 Health Impacts of Environmental Change (4). Seminar on health impacts of environmental change at various scales of analysis. Uses numerical models such as "MIASMA" and "TARGETS" to analyze alternative outcomes of environmental-change scenarios. Presentations from experts are featured. Prerequisite: graduate standing or consent of instructor. Same as Public Health 271.

E247 Air Pollution, Climate, and Health (4). Emission of air pollutants into the atmosphere, physical and meteorological processes that affect transport, and influence on global warming. Concepts of how and where people are most exposed, and how exposures and health effects differ in developed and developing regions. Same as Public Health 269 and Epidemiology 269.

E248 Human Exposure to Environmental Contaminants (4). Introduces founders of conceptual thought that environmental contaminants can impact health. Theory and principles of exposure assessment, the continuum from emissions of a contaminant into the environment to evidence of health effects in a population. Same as Public Health 270/Epidemiology 270.

E250 Cancer Epidemiology (4). Concentrates on understanding how epidemiology plays a role in the search for cancer etiology, prevention, control, and treatment; gives an overview of cancer research with an appreciation of the multidisciplinary nature of the field. Prerequisites: Environmental Health, Science, and Policy E226; graduate standing or consent of instructor. Same as Public Health 201/Epidemiology 201.

E251 Genetic Epidemiology (4). Concentrates on the role of genetic factors in the etiology of disease in human populations with an objective of disease control and prevention, and the role of interactions of genetic factors and environmental exposures in the occurrence of disease. Prerequisites: Environmental Health, Science, and Policy E226; graduate standing or consent of instructor. Same as Public Health 202/Epidemiology 202.

E253 Remediation of Environmental Pollutants (4). Topics include sources of natural and anthropogenic environmental pollutants using ecological concepts, chemical fate and transport, engineering and biological remediation technologies, economics, policy to provide understanding and solutions to these problems. Prerequisite: graduate standing or consent of instructor. Same as Public Health 266.

E254 Topics in Environmental Health Promotion and Education (4). Focuses on design of intervention strategies dependent on the environmental agent, exposure to assessment, SES, health effects, stakeholders, and support base. Programmatic design includes media selection, communication/education, and pre/post surveys. Analysis of transborder and local environmental health promotion programs. Prerequisite: graduate standing or consent of instructor. Same as Public Health 240.

E263 Potable Reuse (4). Provides an in-depth study of the treatment and subsequent reuse of wastewater for drinking. Analyzes existing regulations for both drinking water and reuse situations, microbial and chemical contaminants, hydrogeology, health concerns, and risk assessment. Prerequisite: graduate standing or consent of instructor. Same as Public Health 267.

E283 Environmental Health and Quality (4). Concepts and principles of environmental health. Focuses on industrial hygiene, water and air quality, noise pollution, and environmental carcinogens. Discusses theory and implementation practices through review of legislative measures and enforcement procedures. Examines social and biological interactions surrounding each topic. Prerequisite: graduate standing or consent of instructor. Same as Public Health 272.

E285 Seminar in Environmental Health, Science, and Policy (2). Topics relevant to the field of environmental health, science, and policy are covered in depth. Included are: hazardous and biological pollutants in soil, water, air; remediation technologies; water conflicts; and regulations pertaining to contaminants. Prerequisite: graduate standing or consent of instructor. Same as Public Health 273.

E290 Grant Writing in Environmental Health Sciences Seminar (4). Teaches graduate students fundamentals of grant writing through introduction to funding sources, the missions of these sources, and how differences in mission statements translate into different goals within a proposal. Prerequisite: graduate standing or consent of instructor. Same as Public Health 274.

E293 Environmental Health Science IV: The Lead Case (4). The social ecology of lead use and presence in subsistence goods and the environment, examined from earliest prehistory to the present. Lead has specific health impacts throughout human development. Public policy and surveillance are discussed. Prerequisite: graduate standing or consent of instructor. Same as Public Health 268.

E295 EHSP Master's Thesis Research and Writing (4 to 8). Prerequisite: advancement to candidacy and graduate standing. Satisfactory/Unsatisfactory only. May be repeated for credit.

E297 EHSP Graduate Field Seminar (2 to 4). Serves as a bridge between course work in environmental health sciences and policy and the undertaking of independent research. Helps guide students in developing their pre-thesis/pre-dissertation research project. Prerequisite: graduate standing or consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

E298 EHSP Directed Studies (2 to 4). Prerequisite: graduate standing or consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

E299 EHSP Independent Study (2 to 8). Prerequisite: graduate standing or consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

PLANNING, POLICY, AND DESIGN

***(Schedule of Classes* designation: PP&D)**

NOTE: Prior to fall 2010, all Planning, Policy, and Design course numbers had an "U" prefix.

202 History of Urban Planning (4). Introduction to the historical roots and fundamental perspectives of urban and regional planning. Exploration of the significant historical phases and personalities which have shaped the profession. The roles and responsibilities, the limitations and potential, of urban planning. Prerequisite: graduate standing or consent of instructor.

203 Theoretical Foundations of Planning (4). Intellectual excursion into central themes in policy and planning, including philosophy of the market, institutionalization of space, hypostatizations of policy, constructions of communities, logics of spatial analysis. Objective is engagement of the professional in thoughtful reflections on practice and institutions. Prerequisite: graduate standing or consent of instructor.

205 Environmental Economics and Policy (4). Provides a broad introduction to environmental economics and to environmental policy. Environmental problems facing the United States and Europe are analyzed, and whenever possible, the environmental problems facing developing countries. Prerequisite: graduate standing or consent of instructor.

206 Microeconomic Analysis for Urban Planning (4). Provides students with a working knowledge of basic microeconomic concepts. Emphasizes applications related to urban planning and policy analysis. Topics covered include demand analysis, firm behavior, market structure, public goods, externalities, and the role of economics in land markets. Prerequisite: graduate standing or consent of instructor.

207 Development Control Law and Policy (4). Investigates legal and institutional frameworks for development control. Review of constitutional issues implicated in land-use regulation. Traces development control historically and analyzes contemporary approaches to land-use control which reflect environmental and economic development concerns. Prerequisite: graduate standing. Same as Criminology, Law and Society C207.

208 California's Population (4). Provides a non-specialist introduction to social demography through a focus on California population. Surveys historical and current trends in the State's growth, its industries and occupations, and its ethnic and racial makeup. Prerequisite: graduate standing or consent of instructor.

209 Qualitative Research Methods: Overview (4). Introduction to fundamentals of "qualitative" research and non-positivistic inquiry. Formulation of research questions, selection of method, data collection techniques, and analysis (briefly). Overview of selected methods from ethnography, naturalistic field research, phenomenology, ethnoarchaeology, critical approaches, and others. Prerequisite: graduate standing or consent of instructor.

211 Urban Design and Behavior (4). Acquaints students with vocabulary, history, theories, process, and trends in urban design, and the relationship of design to human well-being. The local environment is used as a resource and a laboratory. Prerequisites: graduate standing and consent of instructor.

212 Transportation Planning (4). Introduces current topics in transportation planning. Includes an analysis of the economic role of transportation in urban areas, land-use impacts of transportation projects, traffic congestion, air quality, alternatives to the automobile, and other transportation topics. Prerequisite: graduate standing.

213 Advanced Qualitative Methods: Analyzing Qualitative Data (4). Introduces students to the theory and practice of analyzing qualitative data. Students must have already learned about data collection and research design for qualitative research and they must have qualitative data they can analyze in the course. Prerequisite: graduate standing or consent of instructor. Same as Political Science 273A and Sociology 223.

214 Quantitative Analysis for Planners (4). Introduces students to the basic statistical concepts used to address issues of public concern. Prepares students to perform, interpret, and evaluate quantitative data analyses commonly used in professional studies. Prerequisite: graduate standing or consent of instructor.

215 Analytical Methods for Planning (4). Emphasizes the development of analytical techniques proven useful in the fields of management and administration. Topics include multiple regression, cost-benefit analysis and discounting, decision trees, and other techniques useful for the purposes of community analysis and planning. Prerequisite: graduate standing or consent of instructor.

219 Advanced Planning Theory (4). Focused readings and discussions aimed at developing a foundation for critical research into the theories and epistemologies of planning and policy. Topics include the liberal, communitarian, communicative, and other conceptions of nationality; praxis, hermaneutics, and policy; topologies of justice and social fracture. Prerequisite: graduate standing or consent of instructor.

220 Qualitative Methods: Fieldwork and Data Collection (4). Covers fieldwork, data collections techniques, and related issues for anti-positivistic research. Data collection techniques include observation, physical traces, participation, in-depth interview. Data checks include veracity, detail, completeness, rigor. Prerequisite: graduate standing or consent of instructor.

221 Public Policy (4). Explores different approaches to public policy analysis, the diverse conceptions of the goals and objectives that should be served by policy, and the appropriate role of the policy analyst. Policy consequences are traced to indirect and subtle incentives and disincentives. Prerequisite: graduate standing or consent of instructor. Same as Criminology, Law and Society C255 and Political Science 221A.

223 Regional Analysis (4). Major concepts and techniques of regional analysis, with applications for urban and regional planning and public policy-making. Definition of regions, processes of economic change, regional structure, location of activities, and analysis of selected policy issues. Emphasis on practical applications. Prerequisite: graduate standing or consent of instructor.

224 Environmental Politics and Policy (4). Reviews and critiques literature on discussion topics including: the nature and effectiveness of the environmental movement and environmental policies; the role of science and technology; the use of economic incentives in policy; decentralization of decision making; and creating arenas for public involvement. Prerequisite: graduate standing or consent of instructor.

225 Local Economic Development (4). Analyzes the economic development process. Attention is given to economic theories of local development and practical implications of those theories. Topics include local economic development and poverty, tax incentives, infrastructure credits, effects of government competition for economic activity. Prerequisite: graduate standing.

226 Public Health Cost-Effectiveness Analysis (4). Examines using cost-effectiveness information to allocate limited resources to maximize health benefits to a population; defining and measuring cost, survival, and health-related quality of life; and how to calculate cost-effectiveness using decision trees and Markov simulation models. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E228, Psychology and Social Behavior P228, and Public Health 220.

227 Qualitative Methods: Case Study (4). Deals with case study as a qualitative, anti-positivistic research method. Discussion focuses on the essential nature of case study research, quality of case study, rigor, design, implementation, analysis, data collection techniques, analysis, and writing. Prerequisite: graduate standing or consent of instructor.

228 Demographics for Planning and Policy (4). Provides planning and policy practitioners with a condensed, nonspecialist orientation to the sources, applications, and interpretation of population statistics, and conveys the steps used in constructing local-area population forecasts and projections. Prerequisite: graduate standing or consent of instructor.

231 Transportation and Environmental Health (4). Critically evaluates how transportation can promote sustainable, healthy, and equitable cities. Examines the interaction of transportation systems with urban form, land use, community health, and environmental quality. Prerequisite: graduate standing or consent of instructor.

233 Transportation, Transit, and Land-Use Policy and Planning (4). Places students into a specific transportation public policy situation to devise real solutions, with the goal of helping students understand factors in land use, travel behavior, politics, and finance that shape transportation planning policy choices. Prerequisite: graduate standing or consent of instructor.

235 Geographic Information Systems (GIS) Problem Solving in Planning (4). Explores the application of geographic information systems (GIS) in urban planning. Steps through a GIS-based planning procedure that balances housing, jobs, tax base, utilities, transportation, and the natural environment. Prerequisite: graduate standing or consent of instructor.

236 Community Design (4). Provides an overview of the current condition of urban design in the United States. Topics include the academic environment, the retail environment, multi- and single-family residential environments, the office environment, and new urban design tools. Prerequisite: graduate standing or consent of instructor.

237 Introduction to Geographic Information Systems (4). Application of Geographic Information Systems (GIS) to the field of urban and regional planning. Emphasizes current issues that occur in actual implementation settings. Lecture/discussion followed by laboratory demonstrating the area of GIS discussed. Offers "hands-on" student usage of GIS software.

238 Advanced Geographic Information Systems (4). Extends study of geographic information systems to more advanced issues, including data sources, data conversion, relational database integration, software customization, and spatial and three-dimensional analysis. Prerequisite: Planning, Policy, and Design 237.

239 Urban Design Theories and Applications (4). Introduction to contemporary and traditional theories of urban design and their applications. Organized around one question: How might planning and design of built environment contribute to making a good city? National and international case studies are introduced. Prerequisite: graduate standing or consent of instructor.

240 International Environmental Policy (4). Explores causes and effects of environmental problems and the effectiveness of different adaptation or restoration strategies and how they are closely linked to ways in which political, economic, demographic, and cultural systems interact among themselves and ecological systems.

241 Health Promotion and Planning (4). Focuses on health and health care in the United States, but discussion of global health issues and/or international comparisons will be made whenever possible. Considers both the social and economic aspects of health and disease. Prerequisite: graduate standing or consent of instructor. Same as Public Health 221.

242 Regional Development Theory (4). Regional economic development concepts and studies, with applications for urban and regional planning, and public policy-making. Roles and performance of economic sectors, technological innovation, and communications in the process of development. Analysis of regional development policies and programs. Prerequisite: graduate standing or consent of instructor.

244 Land-Use Policy (4). Examination of the role of public policy in guiding growth and development in urban and suburban environments. Description of a wide-ranging set of growth policies, the rationales underlying their use, controversies and legal constraints, and evaluation of their effectiveness. Prerequisite: graduate standing.

245 Urban Security (4). Examines changing urban security landscape facing planners, businesses, policymakers, first responders, and academics. Identifies threats and vulnerabilities and how they can be reduced. Focus on transnational networks in which contemporary cities are enmeshed, which function as sources of both threat and opportunity. Prerequisite: graduate standing or consent of instructor.

246 Housing Policy (4). Examines the theories and practices of housing policy and the relationship of housing to larger neighborhood, community, and regional development issues. Considers the roles of private for-profit and not-for-profit developers, lenders, and all levels of government in the provision of housing. Prerequisites: basic statistics and consent of instructor.

247 Neighborhood Planning (4). Focuses on asset-based development and community-building tools. Public policies and neighborhood-based case studies are explored which provide practical skills for the planner of the future. Prerequisite: graduate standing or consent of instructor.

251 Planning and Poverty Alleviation in Developing Countries (4). Critically examines competing conceptualizations, methods of measurement, and poverty alleviation strategies widely used in developing countries. Focuses on poverty conceptualized as economic deprivation, well-being, vulnerability, and social exclusion. Same as Sociology 235.

252 Issues in Environmental Law and Policy (4). Treatment of legal and policy strategies for promoting environmental protection and deterring environmental degradation within the context of other societal objectives. Topical approach with a focus on problems of special interest to criminologists and to environmental policy specialists. Prerequisite: graduate standing or consent of instructor. Same as Criminology, Law and Society C252.

253 Site Planning (4). Examines site specific, neighborhood, and community site planning from the site designer and local government perspectives. By reviewing actual discretionary case applications and case studies, students learn how regulatory, environmental, and government constraints influence site planning. Prerequisite: graduate standing or consent of instructor.

260 Grant Writing for Community Planning and Development (4). Introduces students to grant writing and processes involved in generating funding for nonprofit programs and community research projects. Prerequisite: graduate standing or consent of instructor.

263 Planning, Policy, and Decentralization (4). Critically examines planning and decentralization with a focus on developing countries. Review of theoretical roots, actors, processes, and mechanisms integral to decentralization in planning. Substantive topics covered include social capital, collective action, popular participation, and elite capture. Prerequisite: graduate standing or consent of instructor. Same as Political Science 225A.

264 Planning, Policy, and Design Seminar (1). For first- and second-year doctoral students. Topics include professional development; refereed journal publication process; academic conference presentations; and the job market for doctoral students in and out of academia. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

265 Urban and Community Development Seminar (1). For first- and second-year doctoral students. Topics include scholarship related to the urban and community development area. Discussion of assigned articles and book chapters and how they relate to urban and community development. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

270 Environmental Ethics (4). Introduction to major themes and debates in environmental ethics, with application to contemporary environmental issues. Prerequisite: graduate standing or consent of instructor.

273 Global Urbanization (4). Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this processes? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Social Science 254J and Sociology 252A.

275 Special Topics in Urban Planning (4). Special topics in urban and regional planning are offered from time to time, but not on a regular basis. Course content varies with interest of the instructor. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

278 Culture, Community, and Space (4). Covers how cultures relate to natural and built physical environments. Ways in which culture influences space; ways space influences culture. Concepts for understanding the interrelationship, including values, norms, traditions, religion, and place attachment. Culture and cities, urban form, ethnic communities. Prerequisite: graduate standing or consent of instructor.

279 Theories of Power and Empowerment (4). Studies different ways of thinking about power and its uses. Explores theories of power that inform various notions of empowerment, including resistance, participatory democracy, and workplace empowerment. Prerequisite: graduate standing or consent of instructor. Same as Political Science 223A and Sociology 271.

280A-B Urban Planning Studio (4-4). Offers a practical, problem-solving approach that involves students in varied planning projects. Projects expose students to data gathering, analysis, graphic presentation, politics, law, citizen participation, report writing, and public speaking. Projects emphasize the surrounding metropolitan area. Prerequisite: graduate standing.

282 Urban Design Studio for Planners: An Introduction (4). Introductory urban design for planners. Organized around a variety of assignments to encourage learning by design in a studio setting. Students work on design projects and drawing assignments to learn practical aspects of urban design. Prerequisite: graduate standing or consent of instructor.

283 Collaborative Governance and Public Management (4). Introduction to inclusive management. To make effective use of public resources, public managers are inventing ways of managing that alter relationships within organizations, between organizations, between sectors, and with the public. Requires rethinking fundamentals such as leadership and motivation. Prerequisite: graduate standing or consent of instructor. Same as Political Science 222A.

284 Theories of Public Policy (4). Focuses on two important theorists with the aim being to study not so much their theory, but their mode of theorizing. Taking them two at a time (e.g., Foucault, Bourdieu) allows us to understand each more deeply through the comparison.

288 Environment-Behavior Studies (4). Provides an overview of major theoretical and research perspectives within the field of environment-design research/environment-behavior studies (EBS). Reviews contributions to EBS from architecture, planning, geography, psychology, sociology, and other fields. Prerequisite: graduate standing or consent of instructor.

292 Professional Report (4). Workshop designed to assist M.U.R.P. students in conducting their professional reports. Students select topics, design projects, conduct professional investigations, and write up reports.

296 Doctoral Dissertation Research and Writing (2 to 12). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory only. May be repeated for credit.

297 Research Design (4). Provides training in research design and methods. Students learn how to evaluate the strength of research findings based on the methods used by a researcher and learn to use lessons from the course to develop a research proposal. Prerequisite: graduate standing or consent of instructor.

298 Directed Studies in Urban Planning (2 to 4). Prerequisites: graduate standing and consent of instructor. May be repeated for credit.

299 Independent Study in Urban Planning (2 to 8). Prerequisites: graduate standing and consent of instructor. May be repeated for credit.

PSYCHOLOGY AND SOCIAL BEHAVIOR

***(Schedule of Classes* designation: Psy Beh)**

P201 Research Methods in Psychology (4). In-depth examination of the conceptualization of research problems and linkages between theory and the design of appropriate strategies for empirical research in psychological science. Topics include experimental and quasi-experimental designs, reliability and validity of measurement and non-experimental procedures. Prerequisite: graduate standing or consent of instructor.

P204 Adolescence (4). Considers pubertal and cognitive changes and their social consequences; the family, peer group, school, and cultural contexts in which adolescence is embedded; and selected psychosocial issues including autonomy, identity, health, and well-being. Prerequisite: graduate standing or consent of instructor.

P209A Applied Psychological Research (4). Focuses on scientific and professional issues in the field of psychology. Topics include communication skills; intervention approaches; collaboration, consultation, and referral; and ethical issues associated with at-risk populations research. Prerequisite: graduate standing or consent of instructor.

P212 Social Cognition (4). Explores historical and current developments in cognitive social psychology. Topics include judgment and decision making, automatic versus controlled processing, affective forecasting, motivated reasoning, and the effects of emotion on memory and judgment. Prerequisite: graduate standing or consent of instructor.

P214 Seminar in Social Psychology (4). Presents an overview of selected theoretical and empirical topics in social psychology including social influence and conformity, altruism and aggression, persuasion and attitude change, self and social perception, and social cognition. Prerequisite: graduate standing or consent of instructor.

P218 Infancy (4). Covers development from conception through the second year. Focus is on research and theory concerning infants' physical, social, cognitive, perceptual, emotional, and language development. Also covers transition to parenthood and family context of infant development. Prerequisite: graduate standing or consent of instructor.

P220 Developmental Psychology: Theories and History (4). Examines key concepts, theories, and the historical and philosophical roots of research in human life span development. Focuses on biological and environmental causation, universalism and cultural relativism, continuity and change. Prerequisite: graduate standing or consent of instructor.

P223 Cross-Cultural Developmental Psychology (4). Examines human development in diverse cultures (e.g., Asian, American, and African). Cultural diversity within the U.S. and acculturation of various ethnic groups also discussed. Topics include parenting, family relations, language and cognition, schooling and academic achievement, and morality. Prerequisite: graduate standing or consent of instructor.

P225 Late Adulthood and Aging (4). Examines sociocultural and environmental influences on the social roles, behavior, and personal adjustment of middle-aged and older adults. Changes in age composition and structure of populations, functions of work and leisure, support systems, health care, prospects for social intervention. Prerequisite: graduate standing or consent of instructor.

P228 Public Health Cost-Effectiveness Analysis (4). Examines using cost-effectiveness information to allocate limited resources to maximize health benefits to a population; defining and measuring cost, survival, and health-related quality of life; and how to calculate cost-effectiveness using decision trees and Markov simulation models. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E228, Planning, Policy, and Design 226, and Public Health 220.

P230 Adulthood (4). Focuses on early and middle adulthood. Examines the extended period of transitioning to adulthood; changes in relationships with family members; impact of major role-related experiences (e.g., spouse, parent, worker) on development and well-being; continuity and change in personality and social identities. Prerequisite: graduate standing or consent of instructor.

P231 Professional Issues in Psychology (4). Examines a variety of issues related to the professional socialization and development of graduate students in psychology. Topics include the publication process, sources of research funding, alternative employment options, competitiveness on the job market, and the academic career route. Prerequisite: graduate standing or consent of instructor.

P232 Hardiness as the Pathway to Resilience (4). Theory, research, and practice supports hardiness as a major pathway to surviving and thriving under stress in our turbulent times. Course (1) imparts relevant theory, research, and practice, and (2) teaches how to use hardiness assessment and training techniques. Prerequisite: graduate standing or consent of instructor.

P233 Personality (4). Provides a frame of reference for understanding personality and its role in life-span development, the relationship of the individual to society, and both mental and physical illness. Prerequisite: graduate standing or consent of instructor.

P235 Existential Psychology (4). Representing a needed expansion of positive psychology. the existential approach emphasizes the inherently stressful nature of living, and the personality characteristics that facilitate effective development under pressure. Emphasized are conceptual, research, developmental, assessment, and treatment aspects of existential psychology. Prerequisite: graduate standing or consent of instructor.

P237 Violence, Society, and Psychopathology (4). The multifactorial, societal-contextual nature of violence is examined through historical, philosophical, and social science theoretical accounts. Priority topics are violent crime, socio-environmental factors, family violence, media violence, terrorism, personality and mental disorder, psychiatric institutions, and interventions for violent offenders. Prerequisite: graduate standing or consent of instructor.

P238 Child Psychopathology (4). Examination of etiology, classification, and developmental pathways of disorders, as well as risk and resilience factors, during the childhood/adolescent years. Discussion of genetic influences and contextual risk factors as well as internalizing and externalizing disorders. Prerequisite: graduate standing or consent of instructor.

P239 Adult Psychopathology (4). Explores the antecedents, characteristics, course, outcomes, and options for the prevention or management of various forms of psychopathology and behavior disorder. Focuses on psychological and biobehavioral mechanisms that influence the development, expression, and amelioration of maladaption. Prerequisite: graduate standing or consent of instructor.

P241 Mental Health Services and Interventions (4). Analyzes "state of the art" psychosocial and psychotropic treatments and their role in the "de facto" mental health care system. Introduces mental health services research, with emphasis on skills relevant to developing and evaluating treatment programs. Prerequisite: graduate standing or consent of instructor.

P243 Ecological Context of Psychopathology (4). Surveys the epidemiology of behavioral and other health disorders as they may be affected by socioeconomic status, income disparity, employment stress, adverse employment change, and other social environmental factors. Reviews measurement and design issues in advancing research in this area. Prerequisite: graduate standing or consent of instructor.

P245 Psychological Assessment (4). Familiarizes students with psychological assessments in intelligence, clinical diagnosis, personality, and neuropsychological functioning. Exposure to administering, scoring, and interpreting assessments. Special focus on psychometrics (e.g., reliability and validity), test construction, and ethical responsibilities. Prerequisite: graduate standing or consent of instructor.

P250 Emotion, Reasoning, and Memory (4). Examines research and theory on emotion from the perspective of cognitive psychology. Topics include the effects of emotions on attention, memory, and problem solving; the relations between emotional and cognitive development; flash-bulb memories of intense emotional experiences; eyewitness testimony. Prerequisite: graduate standing or consent of instructor.

P256 Development, Health, and Disease: A Biobehavioral Perspective (4). Interdisciplinary course discusses exposure to disease risk factors and susceptibility to risk exposure as a basis for understanding development, health, and disease. Integrative approach includes relevant concepts from several areas including health and developmental psychology, developmental neuroscience, and behavioral medicine. Prerequisite: graduate standing or consent of instructor.

P257 Genes, Emotions, and Behavior (4). Course in behavioral genetics addresses the nature/nurture question: what is the strength of relative genetic and environmental influences on psychosocial processes ranging from attachment and social behavior to aggression and depression. Prerequisite: graduate standing or consent of instructor.

P258 Health Psychology (4). Interdisciplinary exploration of emerging fields of health psychology and behavioral medicine. Topics: role of stress in the development and treatment of medical problems; sociocognitive determinants of health and illness; interpersonal health transactions; behavioral approaches to medical problems such as diabetes, obesity, hypertension. Prerequisite: graduate standing or consent of instructor.

P262 Interpersonal Processes and Health (4). Examines traditions of research linking interpersonal processes to emotional or physical health. Topics include: role of social support in ameliorating stress, effects of social control on health-compromising behaviors, adverse effects of social relationships on health, causes of deficient social relationships. Prerequisite: graduate standing or consent of instructor.

P263 Eyewitness Testimony (4). Examines the evidence that shows that faulty eyewitness memory is the major cause of wrongful convictions. Explores what the legal system thinks of eyewitness testimony and how the legal system has dealt with eyewitness issues. Prerequisite: graduate standing or consent of instructor. Same as Criminology, Law and Society C263.

P264A Quantitative Methods in Psychology (4). Statistical techniques for inference in psychological research including point, interval, and effect size estimation to establish test association between variables. Techniques from General Linear Model include single- and multifactor analysis of variance with use of linear contrasts and post hoc comparisons. Prerequisite: graduate standing or consent of instructor.

P264B Advanced Quantitative Methods in Psychology (4). Focuses on proper specification of multivariable regression models with emphasis on inferences using OLS and logistical regression. Emphasizes framework for assessing interaction and other complex relationships between response and predictor variables. Use of statistical software to analyze data. Prerequisite: Psychology and Social Behavior P264A.

P265 Memory and the Law (4). Examines the controversial topic of repressed memory, or perception and memory of real-world events. Prerequisite: graduate standing or consent of instructor. Same as Criminology, Law and Society C265.

P266 Psychology and the Law (4). Overview of how psychology is applied to the civil and criminal justice systems, how case law shapes this application, and how legal decisions affect the direction of psychological research. Interdisciplinary approach to research in psychology, law, and/or criminology. Prerequisite: graduate standing or consent of instructor.

P268 Coping with Stressful Life Events (4). Explores how individuals cope with serious life crises (e.g., illness, bereavement), life transitions, and daily stressors. Considers how such events impact on people's cognitions, emotions, and health, and the role of others in the coping process. Prerequisite: graduate standing or consent of instructor.

P271 Human Evolution and Behavior (4). Covers theories and empirical research concerning the evolutionary origins of human behaviors and their variations. An interdisciplinary course emphasizing both evolutionary psychology (e.g., mating strategies, kinship, and parenting) and molecular evolution (i.e., evolution of genes for various behaviors). Prerequisite: graduate standing or consent of instructor. Same as Biological Chemistry 217.

P272 Human Stress and the HPA Axis (4). Introduction to a new and multidisciplinary research field investigating the interactions between the brain, hormones, and behavior. After an introduction to relevant neuroendocrine concepts, covers current research topics in the field including stress, memory, development, and psychopathology. Prerequisite: graduate standing or consent of instructor.

P273 Biobehavioral Aspects of Health and Illness (4). Examines the behavior-physiology interactions of some major bodily systems: the nervous, cardiovascular, gastrointestinal, and endocrine systems. Analysis of normal and abnormal states of these systems as they relate to tissue injury, disease, and rehabilitation. Prerequisite: graduate standing or consent of instructor.

P274 The Psychobiology of Stress (4). Introduction to stress physiology and psychoneuroimmunology and critical review of research in this area. Examines bi-directional relationships between psychological factors (e.g., stressors, social processes, emotions), neuroendocrine and immune systems, and disease. Prerequisite: graduate standing or consent of instructor.

P275 Special Topics in Psychology and Social Behavior (4). Topics covered vary with interests of instructor. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary. Prerequisite: graduate standing or consent of instructor.

P276 Meta-Analysis (4). The process of synthesizing results from a number of studies that address a common research question is often referred to as *meta-analysis*. This applied course explores the meta-analysis process from the coding of retrieved studies to the final research synthesis. Prerequisite: graduate standing or consent of instructor.

P289 The Teaching of Psychology (4). Provides students with the theory and skills needed to teach undergraduate psychology courses. Covers research on theories and methods of teaching, curriculum design, and evaluation. Students also gain practical experience preparing and presenting material. Prerequisite: graduate standing in the Department of Psychology and Social Behavior or consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

P290 Research in Developmental Psychology (4). Introduces graduate students to research conducted by individual faculty members in the area of developmental psychology. This is accomplished by having students involve themselves in the conceptualization, strategy, and implementation of the faculty member's research. Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

P291 Research in Health Psychology (4). Introduces graduate students to research conducted by individual faculty members in the area of health psychology. This is accomplished by having students involve themselves in the conceptualization, strategy, and implementation of the faculty member's research. Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

P292 Research in Psychopathology and Behavior Disorder (4). Introduces graduate students to research conducted by individual faculty members in the area of psychopathology and behavior disorder. This is accomplished by having students involve themselves in the conceptualization, strategy, and implementation of the faculty member's research. Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

P293 Research in Social and Personality Psychology (4). Introduces graduate students to research conducted by individual faculty members in the area of social and personality psychology. This is accomplished by having students involve themselves in the conceptualization, strategy, and implementation of the faculty member's research. Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

P294A-B-C Research Directions in Psychology and Social Behavior (2-2-2) F, W, S. Introduces students to the current research of faculty, graduate students, and visitors to the Department of Psychology and Social Behavior. Includes examination of contemporary research issues and controversies, as well as issues related to students' development as professionals. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only.

P295 Research in Psychology and Law (4). Introduces graduate students to research conducted by individual faculty members in the area of psychology and law. This is accomplished by having students involve themselves in the conceptualization, strategy, and implementation of the faculty member's research. Prerequisite: graduate standing or consent of instructor.

P296 Doctoral Dissertation Research and Writing (4 to 12). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory only. May be repeated for credit.

P298 Directed Studies in Psychology and Social Behavior (2 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

P299 *Independent Studies in Psychology and Social Behavior (2 to 8).* Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

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Guillaume Rocheteau, Ph.D. University of Pantheon-Assas (Paris 2), *Acting Associate Professor of Economics*
Jose Antonio Rodriguez-Lopez, Ph.D. University of California, Berkeley, *Assistant Professor of Economics*
A. Kimball Romney, Ph.D. Harvard University, *Professor Emeritus of Anthropology*
Ana Rosas, Ph.D. University of Southern California, *Assistant Professor of Chicano/Latino Studies and History*
Shawn Rosenberg, M. Litt. University of Oxford, *Professor of Political Science and Social Psychology*
Michael D. Rugg, Ph.D. University of Leicester, *Director of the Center for the Neurobiology of Learning and Memory, and Professor of Neurobiology and Behavior, Cognitive Sciences, and Psychology and Social Behavior*
Vicki L. Ruiz, Ph.D. Stanford University, *Dean of the School of Humanities and Professor of History and Chicano/Latino Studies*
Rubén G. Rumbaut, Ph.D. Brandeis University, *Professor of Sociology*
Donald G. Saari, Ph.D. Purdue University, *Director of the Institute for Mathematical Behavioral Sciences and UCI Distinguished Professor of Economics and Mathematics*
Kourosh Saberi, Ph.D. University of California, Berkeley, *Professor of Cognitive Sciences*
Kamal Sadiq, Ph.D. University of Chicago, *Associate Professor of Political Science*
Wayne Sandholtz, Ph.D. University of California, Berkeley, *Professor of Political Science*
Barbara W. Sarnecka, Ph.D. University of Michigan, *Assistant Professor of Cognitive Sciences*
Evan Schofer, Ph.D. Stanford University, *Associate Professor of Sociology*
William R. Schonfeld, Ph.D. Princeton University, *Professor Emeritus of Political Science*
Tonya L. Schuster, Ph.D. University of California, Riverside, *Lecturer in Sociology*
Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*
Manisha Shah, Ph.D. University of California, Berkeley, *Assistant Professor of Economics*
Paul Shirey, Ph.D. University of California, Irvine, *Lecturer in Economics and Social Sciences*
Stergios Skaperdas, Ph.D. The Johns Hopkins University, *Professor of Economics*
Brian Skyrms, Ph.D. University of Pittsburgh, *Director of the Minor in the History and Philosophy of Science and UCI Distinguished Professor of Logic and Philosophy of Science and of Economics*
Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor Emeritus of Economics*
Charles Anthony Smith, Ph.D. University of California, San Diego, *Assistant Professor of Political Science*
David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Professor of Sociology*
David A. Snow, Ph.D. University of California, Los Angeles, *UCI Chancellor's Professor of Sociology*
Etel Solingen, Ph.D. University of California, Los Angeles, *UCI Chancellor's Professor of Political Science*
Dorothy J. Solinger, Ph.D. Stanford University, *Co-Director of the Minor in Asian Studies and Professor of Political Science*
George Sperling, Ph.D. Harvard University, *UCI Distinguished Professor of Cognitive Sciences and of Neurobiology and Behavior*
Jon Sprouse, Ph.D. Stanford University, *Assistant Professor of Cognitive Sciences*
Ramesh Srinivasan, Ph.D. Tulane University, *Associate Professor of Cognitive Sciences*
Preston Kyle Stanford, Ph.D. University of California, San Diego, *Associate Professor of Logic and Philosophy of Science*
Judith Stepan-Norris, Ph.D. University of California, Los Angeles, *Professor of Sociology*
Mark Steyvers, Ph.D. Indiana University, *Professor of Cognitive Sciences*
Yang Su, Ph.D. Stanford University, *Assistant Professor of Sociology*
Rein Taagepera, Ph.D. University of Delaware, *Professor Emeritus of Political Science*
Katherine Tate, Ph.D. University of Michigan, *Professor of Political Science*
Gary Thom, Ph.D. Yale University, *Professor Emeritus of Political Science*
Keith L. Topper, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science*
Bernard Tranel, Ph.D. University of California, San Diego, *Professor of Linguistics*
Judith Treas, Ph.D. University of California, Los Angeles, *Professor of Sociology*
Yuliya V. Tverdova, M.P.A. Binghamton University, *Assistant Professor of Political Science*
Carole J. Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science and Economics*
Robert Uriu, Ph.D. Columbia University, *Associate Professor of Political Science*
Deborah Vargas, Ph.D. University of California, Santa Cruz, *Assistant Professor of Chicano/Latino Studies*
Roxanne Varzi, Ph.D. Columbia University, *Associate Professor of Anthropology*
Sheila Vaughn, Ph.D. United States International University, *Lecturer in Cognitive Sciences*
Wang Feng, Ph.D. University of Michigan, *Department Chair and Professor of Sociology*
W. C. Watt, Ph.D. University of Pennsylvania, *Professor Emeritus of Cognitive Sciences*
Martin P. Wattenberg, Ph.D. University of Michigan, *Professor of Political Science*
Kai F. Wehmeier, Ph.D. Westfalische Wilhelms-Universität Münster, *Associate Professor of Logic and Philosophy of Science*
Christian Werner, Ph.D. The Free University of Berlin, *Professor Emeritus of Economics*
Douglas R. White, Ph.D. University of Minnesota, *Professor Emeritus of Anthropology*
Joseph L. White, Ph.D. Michigan State University, *Professor Emeritus of Social Sciences*
Charles E. (Ted) Wright, Ph.D. University of Michigan, *Associate Professor of Cognitive Sciences*
Valerie Wright, Ph.D. Fuller Theological Seminary, *Lecturer in Cognitive Sciences and Social Sciences*
Wayne Wright, Ph.D. Temple University, *Assistant Professor of Logic and Philosophy of Science*
John I. Yellott, Jr., Ph.D. Stanford University, *Professor Emeritus of Cognitive Sciences*
Mei Zhan, Ph.D. Stanford University, *Associate Professor of Anthropology*

Visiting Distinguished Professorships

The School sponsors a program of Visiting Distinguished Professorships that exposes students to seminal thinkers in the social sciences. The professorships normally are of a quarter's duration. Participants have included Martin Bronfenbrenner, Professor of Economics (Duke University) and Fellow of the American Academy of Arts and Sciences; Philip Converse, Robert C. Angell Professor of Political Sciences and Sociology (University of Michigan), President of the American Political Science Association, and member of the National Academy of Sciences and the American Academy of Arts and Sciences; Beatrice Whiting, Professor of Anthropology and Education Emeritus, Graduate School of Education (Harvard University), and member of the American Academy of Arts and Sciences; John Whiting, Professor of Social Anthropology (Harvard University) and member of the American Academy of Arts and Sciences; and James Coleman, Professor of Sociology (University of Chicago) and member of the National Academy of Sciences and the American Academy of Arts and Sciences.

OVERVIEW

Undergraduate and graduate education in the School of Social Sciences at UCI represents a commitment to modern social science. The classic subject areas of anthropology, economics, geography, linguistics, political science, psychology, and sociology are included in the School's educational programs, but these programs

go well beyond the traditional disciplines and can be characterized by the following emphases.

First, the faculty recognizes the value of systematic empirical observation and quantitative analysis in the study of human behavior. Developments in computer science and in mathematics oriented toward the problems of the social sciences, and the refinement of techniques for the observational, experimental, and statistical study of human behavior, have contributed major new elements to social science. Students in the School of Social Sciences will become familiar with the mathematical, computational, and statistical tools underlying modern social science.

Second, many of the most interesting questions in the study of human behavior cannot be fixed within the traditional disciplinary boundaries. Some of the new and evolving areas which cross orthodox boundaries are political sociology, public policy, cognitive anthropology, and psycholinguistics. Therefore many courses and course modules are built around these interdisciplinary social science phenomena rather than representing social science disciplines.

Third, the School emphasizes the design of hypotheses and of systems of interrelated ideas as an essential part of scientific pursuit. Consequently, the educational programs place substantial emphasis on understanding social science phenomena through the development of theories that can be used to guide empirical studies.

Educational opportunities for students in the School of Social Sciences extend well beyond attendance at courses. Students may develop independent study proposals in cooperation with interested faculty members or may investigate social science applications via off-campus internships. They are invited to participate in the quarterly evaluation of courses and instructors, to propose new courses and other modifications in existing programs, to nominate candidates for visiting faculty appointments, and to serve on School committees. The School provides a variety of opportunities for faculty-student interaction, and students will find the faculty, administration, and academic counseling staff of the School highly accessible and responsive.

Special Facilities

The School of Social Sciences maintains several special facilities for research and education.

The **Social Sciences Research Laboratory,** used for both faculty and student research, occupies the entire fourth floor of the Social Sciences Laboratory Building. The facility contains 40 experiment and control rooms and several specialized facilities including a virtual reality facility and cognition laboratory.

Three **Computer Laboratories** provide access to networked systems, where students can work on assignments using full-featured word-processing, database, graphics, and statistical packages. In addition, these computers provide students with access to e-mail, Internet services, and the World Wide Web. The Social Science Plaza facility contains state-of-the-art, high-tech lecture halls and is fully Internet accessible.

The Social Sciences Academic Resource Center (SSARC) was created over a decade ago to help School of Social Sciences students obtain the appropriate information to select a career and/or graduate school program, generate professional contacts, and learn how to gain a competitive edge during their undergraduate years. Centered around the five educational pillars (Academics, Research, Practical Experience, Leadership, and Community Service), the SSARC offers valuable services, programming, and resources ranging from resume consultation, internship opportunities, and graduate school guidance, to research and leadership training. Through one-on-one consultations and various co-curricular programs, the staff assist students with developing an educational blueprint that will ensure a quality educational experience while developing a strong educational portfolio and transforming each student into successful leaders within their chosen careers. Visit http://www.socsci.uci.edu/ssarc/ for more information.

Social Sciences Undergraduate Student Affairs (SSUSA) provides general and detailed information about UCI, the School of Social Sciences, and specific requirements exclusive to the majors and minors in the School to students, faculty, administrators, and the general public. SSUSA is fully staffed with academic counselors who speak one-on-one with students regarding their UCI academic career as well as opportunities beyond the classroom. There are also eight peer academic advisors available to undergraduates for walk-in advising regarding requirements and classes. For more information, visit http://www.socsci.uci.edu/ugs/04.php.

Centers for Research

The multidisciplinary **Center for Cognitive Neuroscience** is aimed at bringing together faculty and students interested in understanding the relation between cognitive abilities and the neural systems that support them. Center participants include 11 faculty and their laboratory members. Active areas of research in participating laboratories include visual and auditory perception, motor control, memory, speech and language, and attention, among others. This research is carried out using a variety of methods such as fMRI, EEG, MEG, TMS, as well as patient-based neuropsychological approaches.

The **Center for Decision Analysis,** located in the Institute for Mathematical Behavioral Sciences (IMBS) in the School of Social Sciences, is a specialized research center where the objective is to facilitate interaction and common research goals among scientists whose purpose is to formulate precisely and test theories of human behavior. This is to be interpreted in a wide sense as manifested by the membership which spans the following areas: anthropology, cognitive science, economics, engineering, logic and philosophy of science, mathematics, political science, and sociology. Additional faculty come from management science and psychobiology.

To describe the focus, consider the fruitful symbiotic relationship that has existed for millennia between mathematics and the physical sciences. A goal of IMBS is to generate a similar relationship between mathematics and the behavioral and social sciences. With high-power social scientists (several are members of the National Academy) providing insights about the field and working with the mathematicians who are involved, new mathematical approaches to analyze these issues are being developed and new kinds of mathematical questions are being raised. For more information, visit http://www.imbs.uci.edu/.

The **Center for Demographic and Social Analysis (C-DASA)** is a formal campus center serving nearly 50 UCI faculty from a dozen departments, as well as their graduate and post-graduate trainees. The center is committed to research on the critical issues shaping the well-being of local, national, and global populations. Faculty are recognized nationally and internationally for award-winning research, ranging from China's one-child policy to U.S. welfare reform, from incorporation of Mexican immigrants to gender inequality in home, school, and workplace. C-DASA promotes innovative scholarship by fostering multidisciplinary exchange, supporting collaboration, and building the advanced infrastructure essential for demographic research and training in the twenty-first century.

The **Center for the Study of Democracy (CSD)** continues the work of the UCI Focused Research Program on Democratization that was founded in 1991 and sponsors research and training on the process of democratic transition and the expansion of the democratic process in already established democracies. CSD includes a multidisciplinary faculty from four UC campuses.

CSD's activities are focused on three areas. First, faculty administer a graduate training program on empirical democratic theory. The National Science Foundation selected UCI in 1995 as a national center for the training of doctoral students in democratization issues; the five-year NSF grant provides funding for graduate fellowships and other training activities.

Second, the Democracy research program aims at improving the democratic process in the United States and other established democracies as we enter the next century. The program focuses on reforms to increase the ability of citizens to express their preferences and have these preferences represented within the democratic process.

Third, CSD supports research on the development of sustainable democracies in Eastern Europe, East Asia, and other new democracies. The New Democracies Initiative contributes to the promotion of democracy in these formerly authoritarian systems. For more information visit the CSD Web site at http://www.democ.uci.edu/.

The **UCI Interdisciplinary Center for the Scientific Study of Ethics and Morality** was established in 2003 by a group of scholars interested in recent scientific research that yields insight on the origins and causes of morality. In creating the Center, UCI faculty both address a topic that is becoming one of the new frontiers in science and reflect critically on the moral implications of this new frontier.

The Center focuses on the etiology of ethical behavior and differs in several important ways from existing centers dedicated to the discussion of ethics. Traditional academic approaches tend to originate in philosophical, foundational, or religious discussions of ethics. They tend to be humanistic in orientation and emphasize abstract, theoretical considerations of what constitutes ethics and morality. The Center complements this traditional approach and explores the scientific and/or the empirically verifiable factors that influence morality, using a variety of methodologies that examine factors contributing to and driving moral action in a variety of social, psychological, and biological contexts. The Center encourages ties between scholars interested in ethics in humanities and the sciences—including social science, social ecology, biological sciences, and medicine—building on the interdisciplinary tradition at UCI, complementing, rather than duplicating, existing efforts. Visit http://www.socsci.uci.edu/ethicscenter/ for more information.

The **Center for Global Peace and Conflict Studies (CGPACS)** is a multidisciplinary research unit housed in the School of Social Sciences. The mission of CGPACS is to promote research on international problems and processes. The Center's current research emphases include weapons of mass destruction, especially biological weapons; international governance, focusing on the evolution of international norms and institutions; citizen peace building; international environmental cooperation; and religion in international affairs. CGPACS also sponsors research conferences and public colloquia on topics of current significance. The Center's Margolis Lecture brings to UCI high-profile speakers who have played active roles in international affairs. Recent Margolis Lectures have featured Justice Louise Arbour, former chief prosecutor for the International Criminal Tribunals; Chinese democracy activist Wei Jinsheng; Congressman Christopher Cox; former Secretary of State Warren Christopher; and former Secretary of Defense William Perry. Visit http://www.cgpacs.uci.edu/ for more information.

The purpose of the **UCI Center for Research on Immigration, Population, and Public Policy** is to foster and conduct basic and policy-relevant research on international migration and other population processes, with a main focus on U.S. immigration. In order to encourage multi-investigator, multidisciplinary, and interdisciplinary research projects, the Center organizes informal discussions of ideas for future research projects, "brainstorming" sessions about research funding opportunities,"brown-bag" presentations of research findings, and workshops and conferences. Much of the Center's research focuses on the multigenerational incorporation experiences of immigrant groups in the United States, especially those occurring in diverse contexts such as Southern California. Investigations of this type often devote as much attention to what happens to the children and grandchildren of immigrants as to what happens to immigrants themselves. For more information, visit http://www.cri.uci.edu/.

The **Center for Research on International and Global Studies (RIGS)** was created to be a hub for research and teaching at UCI on the interactions of politics, economics, societies, cultures, and history in global and international affairs. It provides a calendar of events, hosts the bi-weekly International Studies Public Forum and monthly research seminars, collaborates with over 17 other campus centers, and promotes seed funding for collaborative research activities on international and global issues. Faculty associated with RIGS participate in the undergraduate major and honors program in International Studies and the minor in Conflict Resolution.

The **Center for Research on Latinos in a Global Society (CRLGS)** was formed in 1999 and has since hosted a research colloquia series, published a series of working papers, provided grants for graduate and undergraduate students, and coordinated a series of focused research groups of faculty and graduate students. Over the next several years, CRLGS research projects will assess the political and social incorporation of Latinos in Orange County and measure community attitudes toward resources and barriers. For more information, visit http://www.socsci.uci.edu/crlgs/index.htm.

The Institute for Money, Technology and Financial Inclusion (IMTFI) was formed in 2008. Its mission is to support research on money and technology among the world's poorest people: those who live on less than $1 per day. IMTFI seeks to create a community of practice and inquiry into the everyday uses and meanings of money, as well as the technological infrastructures being developed as carriers of mainstream and alternative currencies worldwide.

Degrees

Anthropology	B.A., M.A., Ph.D.
Chicano/Latino Studies	B.A.
Economics	B.A., M.A., Ph.D.
International Studies	B.A.
Philosophy*	M.A., Ph.D.
Political Science	B.A., M.A., Ph.D.
Psychology	B.A., M.A., Ph.D.
Social Science	B.A., M.A., Ph.D.
Sociology	B.A., M.A., Ph.D.

Within the Ph.D. in Social Science is an optional concentration in *Mathematical Behavioral Sciences,* supervised by an interdisciplinary group of faculty.

Within the M.A. in Social Science, students may apply directly to the concentration in Demographic and Social Analysis; for those enrolled in a Ph.D. program at another institution, the M.A. concentration in Mathematical Behavioral Sciences is available.

* Jointly administered by the Department of Philosophy in the School of Humanities.

HONORS

Graduation with Honors. No more than 12 percent of the graduating seniors, who have completed at least 72 units in the University of California will receive honors: approximately 1 percent *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude.* The student's cumulative record at the end of the final quarter is the basis for consideration for awarding Latin Honors. To be eligible for consideration for honors at graduation, the student must, before the end of winter quarter of the senior year, have

submitted an Application for Graduation; be officially declared a Social Sciences major; have all corrections to the academic record processed by the Registrar's Office; if completing the Language Other Than English general education requirement with a language exemption test, pass the test by the end of winter quarter; and be able to verify completion of all course work by the end of the spring quarter of the senior year. Other factors are also considered (see page 52).

Dean's Honor List. The quarterly Dean's Honor List is composed of students who have received a 3.5 grade point average while carrying a minimum of 12 graded units.

Departmental Honors Programs. Most departments in the School of Social Sciences offer an Honors Program (refer to the departmental information). Upon successful completion of the Honors Program, students graduate with Honors in their respective majors and their transcripts note that they were in the Honors Program.

Honor Societies. Several departments in the School of Social Sciences belong to a national honor society. Eligibility is based on satisfying the requirements of the specific honor society. In the School of Social Sciences, these national honor societies include Lambda Alpha Kappa (Anthropology), Omicron Delta Epsilon (Economics), Pi Omicron of Pi Sigma Alpha (Political Science), Psi Chi (Psychology), Pi Gamma Mu (Social Sciences), Sigma Iota Rho (International Studies), and Alpha Kappa Delta (Sociology).

Order of Merit. The Dean of the School of Social Sciences' Order of Merit award recognizes the most outstanding graduating undergraduates and graduate students for their academic achievements, contributions to the School, and service to the campus and community.

Kathy Alberti Award for Graduate Student Excellence. This award recognizes a graduate student who holds truly outstanding promise as a future professor or teacher.

Alumni Academic Excellence Scholarship. This scholarship recognizes an undergraduate for outstanding academic performance and service to the School, campus, and community.

Carole Creek Bailey Undergraduate Award for Excellence in Sociology. This award recognizes an undergraduate student in Sociology for outstanding academic performance.

The Ruth Fulton Benedict Prize. This prize recognizes outstanding writing in anthropology by an undergraduate.

David Easton Award. This award is given for the outstanding qualifying paper written by a Political Science graduate student during the preceding academic year.

Harry Eckstein Award for the Outstanding Undergraduate Honors Thesis. This award is given annually for the best honors thesis written by a Political Science major.

Harry Eckstein Memorial Fund. The Harry Eckstein Memorial Fund is presented annually to Political Science graduate students conducting research toward the completion of the Ph.D. in Political Science at UCI. Recipients of the award are designated as Eckstein Scholars.

Jeff Garcilazo Scholarship. This award, established in honor and memory of the late Chicano/Latino Studies and History professor Jeff Garcilazo, is awarded annually to the undergraduate student author(s) of the best research paper(s) in Chicano/Latino Studies, to provide opportunities for students to examine the historical and contemporary experiences of Latino communities.

Sheen T. Kassouf Endowed Fellowship. The fellowship is awarded to a student enrolled in the UCI Economics doctoral program. Graduate students in all areas of economics are eligible, with the major criteria for the award being excellence in course work and research.

The Justine Lambert Prize in Foundations of Science. This award is given every other year to the best submitted graduate paper on the foundations of logic, mathematics, and the empirical sciences. The competition is open to all graduate students at UCI, regardless of department or school affiliation.

Charles A. Lave Paper Prize for Creative Modeling in Social Sciences. The prize is awarded to any UCI undergraduate or graduate student and may be in any social or behavioral science discipline, or interdisciplinary. It may be qualitative (with words only) or quantitative (with mathematical expressions). The prize will be awarded to a paper that displays creative modeling; points to or includes data that permits model evaluation; and exhibits the clear writing and brevity that Charles Lave valued.

Brian Lu Undergraduate Award for Excellence in International Studies. This award recognizes an undergraduate student in International Studies for outstanding academic performance.

Alice B. Macy Outstanding Undergraduate Paper Award. This award is given to a Social Sciences undergraduate student in any discipline for a paper that demonstrates original research.

The Malinowski Prize for Undergraduate Research. This award recognizes outstanding original research in the area of anthropology.

Thomas W. McGillin Scholarship. This scholarship is given to an undergraduate who is a first-generation citizen of this country with at least one foreign-born parent.

Outstanding Legal Scholar Scholarship. This scholarship is given to an undergraduate who has achieved outstanding academic achievement as well as contributing to the UCI Law Forum program.

Outstanding Transfer Student Scholarship. This scholarship is given to an outstanding community college transfer student in the School of Social Sciences.

Sanli Pastore & Hill, Inc. Excellence in Economics Writing Award. The Institute for Mathematical Behavioral Sciences (IMBS) awards this paper prize for the top graduate student paper in economics or decision analysis. Students who have written papers in game theory, economic theory, mathematical economics, decision analysis, and related areas are encouraged to submit them for consideration.

Jack and Suzie Peltason Scholarship. This award is given at the discretion of the department chair to support and facilitate the education of undergraduate Political Science majors. All undergraduate Political Science majors are eligible to apply.

Pi Omicron Award for Outstanding Political Science Major. This award is given annually by UCI's Pi Omicron Chapter of Pi Sigma Alpha to a graduating senior Political Science major who best exemplifies a commitment to academic excellence and public service.

A. Kimball Romney Outstanding Graduate Paper Award. This award is given to a Social Sciences graduate student in any discipline for a paper that demonstrates original research.

David and Kristen Rosten International and Community Service Scholarship. This scholarship is awarded to an undergraduate who is planning a career in public service in either the domestic or international community.

Elena B. and William R. Schonfeld Scholarship. This scholarship is awarded annually in the School of Social Sciences to the outstanding undergraduate who combines excellence in scholarship with dedication to the University community and the highest level of achievement in other fields. The award is available to students with one year remaining prior to graduation.

School of Social Sciences Outstanding Graduate Scholarship Award. This award is for high intellectual achievement by a Social Sciences graduate student.

School of Social Sciences Outstanding Graduate Student Service Award. This award is for contributions to the Social Science community, including the intellectual growth of others.

School of Social Sciences Outstanding Undergraduate Honors Thesis Award. This award is for the outstanding undergraduate honors thesis.

School of Social Sciences Student-Athlete Award. This award is given to a Social Sciences student who has demonstrated outstanding academic achievement as well as significant contributions to the UCI Athletics Department.

Gary Singer Scholar Athlete Award. This award is for a student athlete who has outstanding academic achievement as well as contributions to their sport.

Robin M. Williams Award. This award is given to an undergraduate student and a graduate student for the best research paper in the field of sociology.

Reza Zarriff and Rufina Paniego Undergraduate Award for Excellence in Anthropology. This award recognizes an undergraduate student in Anthropology for outstanding academic performance.

Undergraduate Program

PLANNING A PROGRAM OF STUDY

Since there are many alternative ways to plan a program, some of which may require careful attention to specific major requirements, students should consult with the School of Social Sciences Undergraduate Student Affairs to design an appropriate program of study.

Students who select one of the School majors in their freshman year might begin by taking the one-digit courses required by their major and one of the mathematics sequences listed under Part A of the School requirements. It is a good idea to take these courses early since they include fundamental concepts that will be widely applicable in more advanced courses. In addition, the lower-division writing requirement of the general education requirement (category I) should be completed during the first year. In the sophomore year, the student might complete the course on computing, three courses toward the general education requirement, four courses in the social sciences, and four electives. Students who are planning to go on to graduate school can use their freshman and sophomore years to advantage by taking courses in theory, research methods, mathematics, and other areas important to graduate study. In the junior and senior years, the student should take courses in the major area and should create an individualized program of study through a combination of courses and course modules which fall in an area of interest. Particular attention should be paid to planning a program of study that will ensure that major requirements are met prior to graduation.

Change of Major. Students who wish to change their major to one offered by the school should contact the Social Sciences Undergraduate Student Affairs for information about change-of-major requirements, procedures, and policies. Information is also available at http://www.changeofmajor.uci.edu.

Double Majors within Social Sciences

In fulfilling degree requirements for multiple majors, a maximum of two lower-divison courses may overlap between any two majors.

Other Double Majors

In fulfilling degree requirements for multiple majors, a maximum of two courses may overlap between any two majors.

Mathematics and Social Sciences

The mathematics requirement stems from the nature of modern social science. The concepts and terms of mathematics, statistics, and computers are an important part of the social scientist's vocabulary. Basic knowledge of these tools is necessary to an understanding of current literature in the social sciences, to the analysis of data, and to an intelligent use of social science models. Each candidate for a degree in the School of Social Sciences is expected to have a basic knowledge of probability, statistics, and computing. In addition, for students who are preparing for graduate school in an area of social science, it will be important to supplement the minimal mathematics requirements with additional courses related to mathematics and social science methodology. The particular courses which would be recommended are not specified here, however, since they are highly dependent on the major emphasis of the student. Students who are preparing for graduate study should consult their advisors to determine a program of study which will give them the research skills necessary for successful graduate work.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 55–62.

School Requirements

A. Familiarity with basic mathematical, computational, and statistical tools underlying modern social sciences. This requirement is met by passing a three-course sequence in mathematics (Anthropology 10A-B-C; Mathematics 2A-B, and either Mathematics 7, Statistics 7, or Management 7; Psychology 10A-B-C; Social Science 10A-B-C; or Sociology 10A-B-C). (NOTE: School of Social Sciences majors may not take Social Science 9A-B-C to fulfill the mathematics requirement.) Computer education is essential for a complete social science education. This requirement can be satisfied by passing Information and Computer Science 21, Informatics 41, or Social Science 3A. Departments may have preferences for specific courses. Students should see their major department for acceptable courses. This course requirement should be taken during the student's first year.

B. An understanding of the fundamental concepts, analytical tools, and methods of social science. This requirement is met by taking two four-unit introductory courses in the School of Social Sciences bearing a one-digit course number. (Such courses include Anthropology 2A, 2B, 2C, 2D; Economics 1; Linguistics 3; Political Science 6A, 6B, 6C; Psychology 7; Social Science 1A, 5A, 5B, 5C, 5D; Sociology 1.) These courses normally should be taken during the student's first year. (NOTE: This requirement may be fulfilled by option B of the departmental requirements for students majoring in Political Science.)

C. An understanding of important advanced areas in social science. This requirement is met by passing satisfactorily nine four-unit upper-division courses in the School of Social Sciences, where at least three of these courses comprise core courses or a module. (NOTE: The major in Social Science requires 11 four-unit upper-division courses.) For modules which are listed with more than three courses, the student may normally elect to take any subset of three courses in the module. Appropriate substitutions may be made upon petition.

D. Four additional four-unit social science courses from any level.

Students are reminded that the Pass/Not Pass option is not applicable to course requirements A through D above or to any additional requirements listed for specific major programs. However, Information and Computer Science 21 and Informatics 41 are exceptions to this rule and may be taken Pass/Not Pass.

Courses used to meet requirements B through D above are included in the computation of the grade point average in courses required in the major program.

Maximum Overlap Between Major and Minor Requirements: Students completing both a major and a minor within the School of Social Sciences may count courses taken to fulfill the School's mathematics and computer science requirement toward satisfaction of both the major and the minor. No other course overlap is allowed. For students completing a major within the School of Social Sciences and a minor outside of the School of Social Sciences, a maximum of two courses may overlap between a major and a minor. No course overlap is permitted between minors.

TRANSFER STUDY RECOMMENDATIONS

The School recommends that students wishing to transfer to UCI do the following:

1. Complete the Intersegmental General Education Transfer Curriculum (IGETC) prior to transfer to UCI.
2. Refer to http://www.assist.org/ for information about community college courses that will fulfill UCI lower-division major requirements.

   Specific course recommendations:

   Prospective **Economics majors:** complete a second semester of calculus (in addition to the courses required for transfer-student admission; see the Department of Economics section).

   Prospective **International Studies majors:** complete two semesters of foreign language at the intermediate level.

   Prospective **Psychology majors:** complete a three-course sequence in introductory, physiological, and either social or abnormal psychology.

TRANSFER STUDENTS

Freshmen and Sophomores: Students transferring to UCI as freshmen or sophomores will fulfill the regular requirements of the four-year program either through work at UCI or through transfer credit for comparable work elsewhere.

Juniors: Following review by the School of Social Sciences, it may be determined that junior transfer students electing to major in one of the School's degree programs, who have good records at other accredited colleges and universities, have satisfied School requirement B and the University requirements. However, all transfer students must fulfill the upper-division writing general education requirement (category I) while at UCI. Students anticipating transfer to UCI in their junior year should plan their curriculum so as to anticipate the special mathematics requirement (School requirement A). Every effort will be made to accommodate individual variation in background, provided students are prepared to commit themselves to intensive work in areas of deficiency. Ordinarily, the typical two-year program for junior transfers is simply the last two years of the regular four-year program, except that students who have not satisfied the mathematics requirements of the School should plan to do so in the junior year and must do so before graduation.

Seniors: Students wishing to graduate with a degree in the School by transferring to UCI in their senior year should plan their work carefully to ensure that the requirements can be met in one year of residence. In general, differences between the program at UCI and programs elsewhere make senior transfers difficult.

SERVICE LEARNING, COMMUNITY SERVICE, AND INTERNSHIPS

Service learning is a meaningful educational activity that integrates community service within the curriculum. It is an opportunity for students to make positive contributions to underserved and marginalized communities through academic courses, field studies, and internships.

Service learning provides out-of-class experiences to reinforce understanding of academic theory while addressing serious community concerns. When combined with a structured curriculum that includes research components, students can explore the role of the social scientist while seeking solutions to problems affecting society. The School of Social Sciences' philosophy is to practice research, service, and good citizenship.

The School actively supports service learning through its philosophy of enhancing the learning process by motivating, inspiring, and teaching students how to recognize and accept their civic responsibilities. The goal is to educate students about social issues and provide them with the necessary tools to solve the difficult problems society faces. Under the guidance and supervision of faculty and staff, students are offered the opportunity to experience personal, professional, social, and intellectual growth through the following School of Social Sciences programs: public- and private-sector internships, community service, field studies, and the specialization in Public and Community Service within the major in Social Science.

UNDERGRADUATE PROGRAMS IN K–12 EDUCATION

Undergraduate students who wish to pursue a career in the field of K–12 education are well-served in the School of Social Sciences and the Department of Education. The following interrelated programs provide opportunities for students to gain knowledge and experience in this important area.

Minor in Educational Studies

The minor in Educational Studies allows students to explore a broad range of issues in the field of education and provides a strong foundation for K-12 teaching. Both introductory and advanced courses are included, giving students a solid preparation for later teacher credential programs and many related occupations. NOTE: A Statement of Intent is required of all students wishing to enroll in this minor. See the Department of Education section of the *Catalogue* for more information.

Department of Education Programs

The Department of Education provides many other opportunities for prospective educators, including a mentoring program which provides students with valuable experience while they work with credentialed teachers; UC Links, a program in which undergraduates tutor K–8 students in after-school settings; and advising services provided by counselors who assist students in planning future careers in education. Further information about these programs is available from the Department of Education counselors at 2001 Berkeley Place.

Students interested in obtaining a teaching credential should see the Department of Education section of the *Catalogue* for information.

SPECIAL PROGRAMS

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. For more information contact the Campuswide Honors Program, 1200 Student Services II; (949) 824-5461; honors@uci.edu; http://www.honors.uci.edu/.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Additional information is available in the Center for International Education section.

Interdisciplinary Minors

A variety of interdisciplinary minors are available to all UCI students. The **minor in Chicano/Latino Studies**, offered by the School of Social Sciences, is designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments of Chicano/Latino communities.

The **minor in Conflict Resolution,** sponsored by the International Studies program in the School of Social Sciences, provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels. The curriculum includes training that students may apply toward State of California certification as a mediator.

Information about the following minors is available in the Interdisciplinary Studies section of the *Catalogue*.

The **minor in Civic and Community Engagement** seeks to provide students with the knowledge, skills, attitudes, and values to engage as citizens and active community members in the twenty-first century. The minor is distinguished both by *what* students learn, and by *how* they learn it.

The **minor in Global Sustainability** trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

The **minor in the History and Philosophy of Science** explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

The **minor in Native American Studies** focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

Information about the following interdisciplinary minors is available in the School of Humanities section.

The **minor in African American Studies** offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora and to investigate the African American experience from a variety of disciplinary perspectives and theoretical approaches.

The **minor in Archaeology** introduces students to modern archaeological theory and practice, to different approaches and theoretical frameworks used in the reconstruction of cultures based on their material remains, and the use of such approaches and frameworks in a comparative context that emphasizes one geographic area.

The **minor in Asian American Studies** examines the historical and contemporary experiences of Asians after their arrival in the United States and seeks to provide an awareness of the history, culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities.

The **minor in Asian Studies** creates opportunities for students to explore Asian topics in a variety of fields, to develop advanced language skills, and to acquire broader perspectives.

The **minor in Latin American and Caribbean Studies** is designed to develop in students an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, health, folk medicine, and creative (art, dance, film, drama, music) accomplishments.

The **minor in Religious Studies** focuses on the comparative study of religions in various cultural settings around the world and seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society.

The **minor in Women's Studies** fosters critical and creative analysis of the various disciplinary perspectives—historical, political, economic, representational, technological, and scientific—that have (or have not) constituted women, gender, and sexuality as objects of study. Women's Studies also offers a minor in Queer Studies.

CAREERS IN SOCIAL SCIENCES

Business and industry often look to social science graduates to fill positions in management, finance, marketing and advertising, personnel, production supervision, and general administration. In the public sector, a wide variety of opportunities are available in city, county, state, and federal government. Teaching is a frequently chosen career at all levels from elementary school teacher to professor. In addition, many graduates enter professional practice, becoming lawyers, psychologists, researchers, or consultants in various fields.

Because all Social Sciences degrees involve an educational program that is interdisciplinary and that prepares students to understand quantitative methods of data analysis, graduates of the School are well-positioned for research and analysis careers at all levels of government and in private firms. Their solid grounding in contemporary social science methods and their familiarity with a broad spectrum of social scientific thinking gives them an excellent foundation for the pursuit of further training in graduate and professional programs.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. Additional information is available in the Career Center section.

Graduate Program

The School of Social Sciences offers graduate training in the following areas: Anthropology (Ph.D. in Anthropology), Cognitive Sciences (Ph.D. in Psychology), Economics (Ph.D. in Economics), Logic and Philosophy of Science (Ph.D. in Philosophy), Mathematical Behavioral Sciences (Ph.D. in Social Science), Politics and Society (Ph.D. in Political Science), and Sociology (Ph.D. in Sociology). In addition, an interdisciplinary concentration in Public Choice is offered within the programs in Economics and Political Science, a concentration in Cognitive Neuroscience is offered within the program in Cognitive Sciences, a specialized concentration in Transportation Economics is offered within the program in Economics, an emphasis in Social Networks is offered within the Mathematical Behavioral Sciences concentration, and a concentration in Political Psychology is offered within the program in Political Science. When an applicant's interests lie outside of or across these areas, the Associate Dean of Graduate Studies, School of Social Sciences, may, on rare occasions, appoint a three-member faculty committee to guide an independent course of study for the Ph.D. degree in Social Science.

The M.A. degree in Anthropology, Economics, Philosophy, Political Science, Psychology, Social Science, or Sociology may be conferred upon students in Ph.D. programs after completion of the necessary requirements.

Additionally, the M.A. degree program in Social Science with a concentration in Demographic and Social Analysis is supervised by faculty from the Schools of Social Sciences and Social Ecology. Students may apply directly to this M.A. program.

In cooperation with the UCI Department of Education, students enrolled in a School of Social Sciences graduate program may choose to pursue a teaching credential while working toward their degree. After completion of requirements for an M.A. degree, students may apply for admission into the credential program administered by the Department of Education. As required by law, the applicant must pass the California Basic Educational Skills Test (CBEST), obtain a Certification of Clearance, and successfully complete the appropriate subject area examination or an approved subject-matter program. A detailed description of the program may be obtained from the Social Sciences Graduate Office or the Department of Education.

ADMISSION

Potential graduate students should apply by January 15 to receive fullest consideration for financial aid. Applicants should indicate the title of the degree sought (Anthropology, Economics, Political Science, Psychology, or Social Science), and the academic area of concentration (see above). All applicants are required to submit Graduate Record Examination General Test scores. Letters of recommendation and the applicant's statement of interest are important factors in the admission decision.

In addition to the University admission requirements described in the Graduate Division section, individual graduate programs may prescribe special requirements or expectations of applicants, subject to the approval of the Graduate Council. Such requirements are minimum standards only; successful applicants typically must exceed them by a substantial margin.

FINANCIAL SUPPORT

Many students receive financial support in the form of fellowships, teaching assistantships, or research assistantships available under grants to individual faculty. Before accepting an offer of admission with financial support for the first year, applicants should inquire about the likelihood of such support in future years. Occasionally, a newly admitted student may receive a multiyear commitment of some specified financial support, but this is not the rule. Students are also advised to seek aid from sources external to the University. NOTE: Teaching assistantships do not include remission of fees or nonresident tuition.

LENGTH OF STUDY AND RESIDENCE

The normative time for completion of the Ph.D. degree is either five, six, or seven years, depending upon the specific program. See the department sections for information.

Students admitted to the M.A. concentration in Demographic and Social Analysis should be able to earn the M.A. within one to two years.

Because the intellectual training offered by the School requires full-time study and constant contact with the faculty, the School does not accept part-time students.

Community Outreach

The **Ambassador's Council** has been created to promote and enrich the School by supporting new and existing schoolwide/department projects. It collectively acts as an official student in discussing program development with administrators and department chairs and other faculty.

The **Citizen Peacebuilding Program** at UCI is a distinctive international clearinghouse for research, education, and action on public peace processes. The Program focuses on how citizens participate in these activities to prevent violent conflict and, if violence occurs, to promote reconciliation and sustainable peace. The purpose is to significantly contribute to the theory and practice of conflict resolution.

Through the **Global Connect** program, the School of Social Sciences is hoping to connect its academic and human capital with selected underrepresented schools within Orange County. Through in-class lectures and interactive lessons, students are introduced to the concepts and realities of global markets, post-cold war political identities, borderless social issues (literacy, hunger, AIDS), international organizations (the World Bank, the United Nations) and the multidimensional themes of globalization.

HABLA is a broad-spectrum Latino-focused educational outreach program based in the School of Social Sciences and created by Professor Virginia Mann in 2000 with the support of the Orange County Children and Families Commission. Its purpose is to increase the school readiness of disadvantaged children ages two–four years, by uniting faculty and students at UCI with the Santa Ana Unified School System, local Families Resource Center, Americorp/VISTA, FACT, and the national Parent Child Home Program (PCHP).

Jumpstart was established on the UCI campus by Professor Virginia Mann in 2003. Students involved as Jumpstart members are paired with children participating in pre-school programs in the local Orange County area. The purpose is to help young students develop language, literacy, and social skills. Social Sciences undergraduates usually serve with Jumpstart for a full school year. The UCI Jumpstart program recruits, trains, and supervises UCI students to work with Head Start and other early-childhood programs in low-income communities of Orange County.

The School of Social Sciences' **Summer Academic Enrichment Program (SAEP)** is an intensive, five-week on-campus residential program. It is designed to enhance the academic experience of first-generation, low-income university students. SAEP is a landmark program on the University of California, Irvine campus and represents a successful model to offer a rigorous research experience. Three courses in research methods, statistical analysis, and writing and communications are taught by UC Irvine faculty. SAEP's goal is to strengthen specific analytical and research skills and to prepare participants for graduate school.

DEPARTMENT OF ANTHROPOLOGY

3203 Social & Behavioral Sciences Gateway; (949) 824-7602
Bill Maurer, **Department Chair**

Anthropology is the comparative study of past and present human societies and cultures. The Department of Anthropology at UCI is at the forefront of addressing issues in contemporary theory and ethnographic methods within the discipline. The Department has a strong interdisciplinary bent, with research and teaching interests in economic anthropology, political and legal anthropology, the anthropology of finance, social history and social change, the anthropology of science, technology and medicine, identity and ethnicity, gender and feminist studies, urban anthropology, modernity and development, religion, visual anthropology, and the arts and expressive culture. The Department also has a strong emphasis on the study of contemporary issues, especially those concerned with emergent, fluid, and complex global phenomena such as international flows of goods, peoples, images, and ideas; the relationship between global processes and local practices; immigration, citizenship, and refugees; population politics; violence and political conflict; ethnicity and nationalism; gender and family; food, health, and technological innovation; law; development and economic transformation; urban studies; and environmental issues. Geographic regions of expertise include China, Southeast Asia, South Asia, Oceania, Europe, Latin America, the Caribbean, East Africa, Latino communities of the United States, and diasporic and transnational communities in the United States and abroad.

Undergraduate Program

The major in Anthropology prepares students to embark on a wide range of careers, to pursue graduate studies, and to continue to learn and achieve in our culturally diverse world. The curriculum develops students' knowledge and skills, including (1) an understanding of cultural diversity and global relationships; (2) the fundamentals of conducting research and analyzing sources of information through ethnographic and other anthropological techniques; and (3) communication skills in organizing and presenting information in written reports and oral presentations.

REQUIREMENTS FOR THE B.A. DEGREE IN ANTHROPOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 460.

Departmental Requirements for the Major

School requirements must be met and must include 12 courses (48 units) as specified below:

A. Anthropology 2A.

B. Anthropology 2B, 2C, or 2D.

C. Anthropology 30A or 30B.

D. Three topical courses (12 units) from Anthropology 120–159, 170–179).

E. Two courses (eight units) on a geographical area, from Anthropology 160–169.

F. Four additional elective courses (16 units) from Anthropology 30A, 30B, 40–179, 180A.

Students are strongly encouraged to take Anthropology 180A after they have had at least three courses beyond Anthropology 2A and 2B, 2C, or 2D. Students are also strongly encouraged to take both Anthropology 30A and 30B.

The faculty encourages Anthropology majors or minors to study abroad and experience a different culture while making progress toward degree objectives. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of many worldwide opportunities. For example, EAP offers excellent opportunities to study anthropology at many universities abroad; courses taken abroad can be used to fulfill departmental requirement C, D, and E. Study abroad also can provide opportunities for cross-cultural experience, field research, and foreign language training. The Undergraduate Research Opportunities Program (UROP) provides funding for independent field research. See the Center for International Education and the Undergraduate Research Opportunities Program sections of the *Catalogue* for additional information.

Honors Program in Anthropology

The Honors Program in Anthropology is designed to allow undergraduates to pursue field research and write an honors thesis on topics of their choice under the guidance of Department of Anthropology faculty members. Research projects typically involve a combination of library research, exploratory ethnographic interviews, participant observation, and systematic data collection and analysis. The program is open to all senior Anthropology majors with a grade point average of 3.3 or better overall, with 3.5 in Anthropology courses (at least five courses). Successful completion of the Honors Program and the honors thesis satisfies the upper-division writing requirement. Students must apply to be admitted into the Honors Program. The application form is available on the Departmental Web site (http://www.anthro.uci.edu); in the Department office (B203 SBSG); and in the School of Social Sciences Undergraduate Student Affairs Office (1201 SBSG).

Although course work for the Honors Program does not start until the senior year, it is highly recommended that during the spring quarter of the junior year, students find a professor willing to serve as their research project advisor on the basis of a mutually acceptable abstract that indicates the goal and significance of their project. If extensive research is to be undertaken at this time, students enroll in Anthropology 199.

During the fall quarter of the senior year, students enroll in Anthropology H190A and write a proposal describing their research question, the relevant background literature, and the method of data collection and analysis. Field work for the project may begin during this quarter.

In the winter quarter of the senior year, students begin or continue ethnographic field research by enrolling in Anthropology H190B. Field research typically combines exploratory field research with fixed format data collection methods.

In the spring of the senior year, students enroll in Anthropology H191 and complete a senior honor thesis that is typically 40 to 80 pages long. Honor theses are read and evaluated by the advisor and the Undergraduate Program Director.

Anthropology Minor Requirements

Requirements for the minor in Anthropology are met by taking seven Anthropology courses (28 units) as specified below:

A. Anthropology 2A.

B. Anthropology 2B, 2C, or 2D.

C. Anthropology 30A or 30B.

D. Two topical courses (eight units) from Anthropology 120–159, 170–179).

E. Two courses (eight units) on a geographical area, from Anthropology 160–169.

Medical Anthropology Minor Requirements

Requirements for the minor in Medical Anthropology are met by taking seven Anthropology courses (28 units) as specified below:

A. Anthropology 2A.

B. Anthropology 2B, 2C, or 2D.

C. Anthropology 30A or 30B.

D. Anthropology 134A.

E. Three topical courses (12 units) from among the following: Anthropology 121D, 128B, 133A, 134D, 134E, 134G, 136K; Anthropology 129, 139 (special topics, by petition to the Undergraduate Director); Sociology 154.

Residence Requirement for the Minor: The four required upper-division courses must be completed successfully at UCI. Two of the four may be taken through the UC Education Abroad Program provided course content is approved in advance by the Undergraduate Director of the Department of Anthropology.

NOTE: Students may complete only one of the following programs: the major in Anthropology, the minor in Anthropology, or the minor in Medical Anthropology.

Interdisciplinary Minor in Archaeology

An interdisciplinary minor in Archaeology is offered by the Department of Art History. See the School of Humanities section of the *Catalogue* for information.

Graduate Program

Participating Faculty

Victoria Bernal: Feminist theory, capitalism and social transformation, the Islamic revival, civil society, globalization, and cyberspace, diaspora, Africa

Tom Boellstorff: Sexuality, postcoloniality, HIV/AIDS, mass media and popular culture, language and culture, Indonesia, Southeast Asia

Michael Burton: Economic anthropology, ecological anthropology, psychological anthropology, gender; Africa, Micronesia

Frank Cancian: Economic anthropology, inequality, peasants; Mexico

Leo R. Chávez: International migration, Latin American immigration, the politics of reproduction, culture theory, narrative and history, citizenship and subjectivity, nationalism, medical anthropology

Benjamin Colby: Culture theory and cultural pathology, content analysis, psychological anthropology, cognition, narrative structures, psychoneuroimmunology; Japan, Mesoamerica, women's health and well-being in Orange County

Susan Bibler Coutin: Law, culture, immigration, human rights, citizenship, political activism, Central America

Julia Elyachar: Economic anthropology, social theory, management, evil/witchcraft, NGOs, state, Egypt, Israel/Palestine, former Yugoslavia

Angela Garcia: Medical anthropology, psychological anthropology, subjectivity, drugs, gender, criminality, Latin America and U.S.

Robert Garfias: Ethnomusicology, ethnicity

Susan Greenhalgh: Social studies of science, technology, and medicine; politics of population reproduction, modernity/globalization, feminism/gender, China, Taiwan, Pacific Rim

Karen Leonard: Social history of India, caste, ethnicity and gender, Asian-Americans and Muslim Americans, religion, ethnicity, class, and gender

Lilith Mahmud: Gender, nationalism, elites, race, citizenship, secrecy, transparency, knowledge production, secret societies, power, the anthropology of Europe

George E. Marcus: Distributed knowledge systems, aesthetic influences on diverse practices of rationality; the changing metaculture of the anthropological research process, challenges to secularism, the study of intellectuals and power, the decline of elites, transcultural networks; Europe and Oceania

Bill Maurer: Anthropology of law, globalization, transnationalism, citizenship and nationalism, finance capital, identity, Caribbean

Michael J. Montoya: Social inequality and health; race and ethnicity; social and cultural studies of science, technology, and medicine; the participation of ethnic populations in biomedical research; the U.S./Mexican border, critical bioethics

Keith M. Murphy: Linguistic anthropology, design, aesthetics, semiotics, nonverbal behavior, Scandinavia

Kristin Peterson: Political economy, policy-making, intellectual property law, and science, health, and medicine; Nigeria and West Africa

A. Kimball Romney: Experimental and psychological anthropology, quantitative and cognitive anthropology

Justin B. Richland: Anthropology of law, legal discourse analysis and semiotics, indigenous law and politics, North American postcolonialism

Roxanne Varzi: Visual anthropology, media, youth culture, religion Islam, war and urban anthropology and public culture; Iran

Douglas White: Cross-cultural research, mathematical anthropology, social networks, longitudinal analysis, development and social change

Mei Zhan: Medical anthropology, cultural and social studies of science, globalization, transnationalism, gender, China, the United States

Affiliated Faculty

Etienne Balibar: French and comparative literature, literary and social theory, Marxism and postmodernism

Duran Bell: Economics, economic anthropology

John P. Boyd: Kinship, social networks, mathematical anthropology

Carol Burke: Folklore, cultural studies

J. Paul Dourish: Human-computer interaction, computer-supported cooperative work

Paula Garb: Anthropology of conflict and conflict resolution, ethnic and environmental conflict in the former U.S.S.R.

David Theo Goldberg: Race and racism, social and political theory, sociolegal studies/law and society and South Africa

Mimi Ito: New media use, particularly among young people in Japan and the U.S.; digital media use in the U.S. and portable technologies in Japan

Cecelia Lynch: International relations (theory, organization, law), religion and ethics, social movements and civil society actors (on peace, security, globalization, humanitarianism, and religion)

Bonnie Nardi: Human-computer interaction, activity theory, cultural responses to technology development

Carrie Noland: Twentieth-century French literature and theory

Kavita Philip: Transnational studies of science and technology; feminist technocultures; gender, race, globalization, and postcolonialism; environmental history; and new media theory

Gabriele Schwab: Nineteenth-century English and comparative literature; modernish; American literature; contemporary theory; literature and psychoanalysis; feminist and gender studies; cultural studies and criticism; Native American literatures

Jennifer Terry: Cultural studies, science and technology studies, formations of sexuality, American studies in transnational perspective

Alladi Venkatesh: New media, information technologies, marketing, postmodern theory and marketing, cross-cultural consumer behavior

James Diego Vigil: Urban, psychology, socialization and educational anthropology, sociocultural change, urban poverty, Mexico and U.S. Southwest ethnohistory, comparative ethnicity

The Department of Anthropology offers a Ph.D. degree program in Anthropology. The program focuses on social and cultural anthropology, with a strong focus on understanding emergent processes and systems at a number of scales, including the national and transnational level. Areas of teaching emphasis include the anthropology of modernity and development; political, legal, and economic anthropology; ethnographic method; and the anthropology of science, technology, and medicine. In addition, Ph.D. students have the option of enrolling in a Feminist Studies or a Critical Theory emphasis, both of which involve interdisciplinary work with departments and centers in the School of Humanities. The Department's faculty members have interests in ethnicity, gender, international migration, science, technology and medicine, law and finance, urban anthropology, youth culture, and social networks. The program also provides rigorous training in ethnographic method. The Department is committed to fostering new and innovative approaches to anthropological inquiry in a pluralistic and intellectually open academic environment. Program faculty take diverse theoretical and methodological approaches to a variety of substantive issues. They are united, however, in a willingness to question taken-for-granted theoretical premises and analytic frames, and to engage in good-faith intellectual dialogue about alternative models and approaches.

ADMISSION

Students are admitted to the program based on their application materials and evidence of scholarly potential, including grade point average, GRE scores, and letters of recommendation.

REQUIREMENTS

Students must complete a one-year Proseminar in Anthropology (202A-B-C) during their first year and one course in anthropological fieldwork methods during their second year. In addition, students are required to complete two-course sequence in statistics, research design, and data analysis (211A, 212A), and six elective courses in Anthropology, which are selected in consultation with their advisor and which normally cover a coherent area of specialization within the field. All course work must be completed before a student is advanced to candidacy. Students must demonstrate competence to read one foreign language, in accordance with the requirements of the Ph.D. degree in Anthropology.

At the end of the first year, students must pass a formal evaluation which is made by the Department of the basis of (1) the first-year course work and (2) examinations to be taken as part of the Proseminar. Students should advance to candidacy by the end of the third year; the advancement to candidacy examination is based on a research proposal, a review of relevant literature, and an annotated bibliography. The fourth (and, in many cases, some or all of

the fifth) year is normally devoted to extended anthropological fieldwork. The sixth year (in some cases, also part of the fifth) is devoted to writing the dissertation, in close consultation with the advisor. The normative time for completion of the Ph.D. is seven years, and the maximum time permitted is eight years.

Feminist Studies Emphasis

A graduate emphasis in Feminist Studies is available. Refer to Women's Studies in the School of Humanities section of the *Catalogue* for information.

Critical Theory Emphasis

A graduate emphasis in Critical Theory is available. Refer to the Critical Theory Emphasis in the School of Humanities section of the *Catalogue* for information.

Courses in Anthropology

***(Schedule of Classes* designation: Anthro)**

LOWER-DIVISION

2 Introduction to Anthropology. Basic introduction to anthropology. These courses can be taken in any order.

2A Introduction to Sociocultural Anthropology (4). Introduction to cultural diversity and the methods used by anthropologists to account for it. Family relations, economic activities, politics, gender, and religion in a wide range of societies. Stresses the application of anthropological methods to research problems. **(III, VIII)**

2B Introduction to Biological Anthropology (4). Evolutionary theory and processes, comparative primate fossil record, human variation, and the adequacy of theory, and empirical data. **(III)**

2C Introduction to Archaeology (4). Archaeological theory and cultural processes with emphasis on the American Southwest, Mesoamerica, and Mesopotamia. **(III)**

2D Introduction to Language and Culture (4). Explores what the study of language can reveal about ourselves as bearers of culture. After introducing some basic concepts, examines how cultural knowledge is linguistically organized and how language might shape our perception of the world. Same as Linguistics 68. **(III)**

10A-B-C Probability and Statistics (4-4-4). An introduction to probability and statistics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Emphasizes examples from anthropology, sociology, and related social science disciplines. Same as Sociology 10A-B-C. Students who receive credit for Anthropology 10A-B-C may not receive credit for Political Science 10A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Science 9A-B-C or 10A-B-C, or Sociology 10A-B-C. **(V)**

20A People, Cultures, and Environmental Sustainability (4). An anthropological consideration of global environmental sustainability from the perspective of human cultures and communities. Causes and consequences of population growth, natural resource management, environmental law, environmental ethics. Case studies emphasize tropical rain forests, arid lands of Africa and North America. **(VIII)**

30A Global Issues in Anthropological Perspective (4). Explores anthropological perspectives on issues of importance in an increasingly global society. Topics vary from year to year; may include emphases on ethnic conflict; identity; immigration and citizenship; religion and religious diversity; medical anthropology; legal anthropology; development and economic change; gender. **(VIII)**

30B Ethnography and Anthropological Methods (4). Explores ethnography, anthropology's classic method. Students obtain hands-on training in participant observation, interviewing, and other methods, in local communities, and the preparation of research reports. Also provides theoretical and reflexive readings on ethnography.

41A Global Cultures and Society (4). Offers a general overview of the rise of global interdependence in political, economic, demographic, and cultural terms. Considers what drove people from relative isolation into intensified intercourse with one another, and investigates the consequences of this shift. Same as International Studies 11. **(III, VIII)**

50B Gender and Global Health (4). Examines the social forces, life circumstances, and political and economic processes that influence gendered health outcomes. Focuses especially on women located at the economic and political margins of societies throughout the world. Registration priority given to undergraduate Anthropology majors.

85A Cultures in Collision: Indian–White Relations Since Columbus (4). An introductory survey of topics such as: indigenous religious belief and socio-political organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. Slides, films, and trips to local museums enhance student learning. Same as Sociology 65. **(VII)**

89 Special Topics in Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

UPPER-DIVISION

121A Kinship and Social Organization (4). Organization of social life primarily in preindustrial societies. Theories of kinship, marriage regulations, sexual behavior, and social roles. Comparisons of biological, psychological, sociological, and economic explanations of social organization. **(VIII)**

121D Cross-Cultural Studies of Gender (4). Familiarizes students with the diversity of women's experiences around the world. Gender roles and relations are examined within cultural and historical contexts. A central concern is how class, race, and global inequalities interact with women's status. Prerequisite: Anthropology 2A or 2B. **(VIII)**

121G Political Anthropology (4). Utilizes anthropological accounts of Western and non-Western societies to question conventional ways of thinking about power and politics. Classical traditions in political anthropology are critiqued; an alternative view is presented through recent anthropological political analyses of topics such as class, gender, aesthetics, and popular culture. **(VIII)**

121J Urban Anthropology (4). Cultural roles of urban centers and processes or urbanization in comparative perspective, focusing on nonwestern, nonindustrial societies of past and present; relationship between modern urban centers and Third World peoples. Migration, urban poverty, adaption, social and political integration of rural folk in urban settings in Africa, Asia, Latin America. **(VIII)**

125A Economic Anthropology (4). Economic systems in comparative perspective: production, distribution, and consumption in market and non-market societies; agricultural development in the third world. Prerequisite: one course in general science, anthropology, economics, geography, or sociology. Same as Economics 152A. **(VIII)**

125B Ecological Anthropology (4). Studies relationships between human communities and their natural environments. The role of environment in shaping culture; effects of extreme environments on human biology and social organization; anthropologist's role in studying global environmental problems, e.g., African famine, destruction of tropical rain forests. Prerequisite: Anthropology 2A, 2B, or 2C. **(VIII)**

125S The Anthropology of Money (4). Anthropological approaches to money; impact of money on subsistence economies; cultural history of money; and modern transformations of money. Students conduct ethnographic research on alternative money practices in Southern California, and create an online exhibition and research paper.

125X Transnational Migration (4). Examines the movement of people across national borders, governmentality and the role of state practices to control populations, and issues of citizenship, belonging, and identity. Examples are drawn from the United States, Europe, Latin America, Asia, and Africa. Same as Chicano/Latino Studies 161. **(VIII)**

125Z Muslim Identities in North America (4). Explores multiple identities of Muslims in North America, including indigenous Muslims (e.g., African American Muslims and Sufis) and immigrants of many national origins. Explores religious, political, cultural, ethnic, class differences among American Muslims, turning to Islamic institutions near UCI to conduct small research projects. Same as Asian American Studies 142. **(VII)**

126A Elite Cultures (4). The distinctive contribution that ethnographic studies have made to the understanding of elites past and present, in particular societies and globally.

127A Law and Modernity (4). The rise and spread of Enlightenment legal traditions, social contract theory, individual rights, ideologies of "liberty, equality, fraternity"; contradictions of liberal law, its understandings of "primitive" and "civilized"; pervasive myths of property, difference, race, and rights. Reading- and writing-intensive. Same as Criminology, Law and Society C191. **(VIII)**

128A Introduction to Science Studies (4). Explores the ways in which science and technology have been conceived of in the Social Sciences through the twentieth century. Emphasis on recent literature in Science and Technology Studies (STS), especially writings that concern the relationship of science to power and politics.

128B Race, Gender, and Science (4). Perfect for pre-health, science, and social science majors wanting to appreciate how science and society interact. Race and gender as biological and socio-cultural constructs are examined. Questions explored: What is disease? What is science? What are social and biological differences? Same as Chicano/Latino Studies 176. **(VII)**

128C Culture, Power, and Cyberspace (4). Explores cultural and political implications of the infotech revolution and the ways new media are used around the world, new cultural practices and spaces (e.g., cybercafes), debates surrounding the meanings of these new technologies, and their implications for transforming society.

129 Special Topics: Social and Economic Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

132A Psychological Anthropology (4). Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics, biocultural aspects of child development and attachment, evolutionary models of culture and behavior, politically linked personality, cognitive anthropology, psychology of narrative forms, comparative national character studies. Prerequisite: Psychology 7A or 9A, B, C, or Psychology and Social Behavior 9 or 11A, B, C, or Anthropology 2A. Same as Psychology 173A.

134A Medical Anthropology (4). Introduces students to cross-cultural perspectives and critical theories in anthropological studies of medicine. Special attention is given to diverse ways of understanding bodies, illnesses, and therapeutic practices in our changing world. **(VIII)**

134D Culture and Health (4). Explores America's cultural diversity by examining differing systems of belief and behavior in relation to illness, curing, disease, practitioner behavior, and use of conventional medical services. Groups focused on include Native Americans, African Americans, Latinos, and Asians. Same as Chicano/Latino Studies 172. **(VII)**

134E Ways of Healing (4). Designed to explore and discover the diverse ways humans have devised to heal themselves. The theoretical premise is that social ties are an essential ingredient to successful healing and, indeed, protection against the onset of illness.

134G HIV/AIDS in a Global Context (4). Examines issues concerning cultural conceptions of HIV infection and disease worldwide. Topics include treatment and prevention, identity and behavior, risk, ethnicity, gender, youth, sexuality, activism, drug use, illness, religion, the clinical encounter, national belonging, and the pharmaceutical industry. Prerequisite: satisfactory completion of the lower-division writing requirement. **(VIII)**

134M Borders and Bodies: Boundaries and Bioscapes (4). Examining borders and boundaries as material and semiotic constructs, explores troublings of places, spaces, disciplines, borders, and bodies of all sorts. Geographical, corporeal, and identity transgressions examined alongside blurrings of nature/culture, biology/society, modernity/postmodernity, and other such concepts/situations. **(VII)**

135A Religion and Social Order (4). An anthropological exploration of religious belief and practices in diverse social and historical contexts. Emphasis placed on selected non-western traditions of the sacred, and on issues of power, ritual, moral order, and social transformation. **(VIII)**

135I Modern South Asian Religions (4). Nineteenth- and twentieth-century developments in Hinduism, Islam, and Sikhism are covered, with emphasis on changing forms as well as contents of religious movements. **(VIII)**

136A Nationalism and Ethnicity in the Contemporary World (4). An exploration of the concepts of identity, culture, ethnicity, race, and nation through ethnographic cases, with a view to asking larger questions: How do people create nativeness and foreignness? How does "culture" get worked into contemporary racisms and nationalisms? **(VIII)**

136B History of Anthropological Theory (4). Provides foundational knowledge in the discipline of anthropology by reviewing competing approaches in anthropological theory, from the nineteenth century to the present. Covers historically fundamental approaches—social evolutionism, functionalism—and recent movements such as feminism, cultural studies, poststructuralism, and postmodernism.

136D Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Political Science 154G, Social Science 183E, and International Studies 183E. **(VIII)**

136G Colonialism and Gender (4). An anthropological enquiry into the ways colonial relations of power have been structured and gendered throughout the world and to what effect. Examines the social locations of men and women in the everyday exercise of colonial and imperial power.

136K The Woman and the Body (4). Probes culture and politics of the female body in contemporary American life. Focusing on "feminine beauty," examines diverse notions of beauty, bodily practices, and body politics embraced by American women of different classes, ethnicities, and sexualities. **(VII)**

137A Reading Images Culturally (4). Students are provided with the analytical tools necessary to undertake research on visual representations. Images, as cultural productions, are steeped in the values, ideologies, and taken-for-granted beliefs of the culture which produced them. Of concern are representations of race, identity, gender, and the "Other." Same as Chicano/Latino Studies 116. **(VII)**

138J Music of Japan and Okinawa (4). A survey of the musics that developed in the islands of Japan and Okinawa from the perspective of the social, political, and economic forces that played upon the culture and that formed the context of these musical languages. Prerequisite: upper-division standing or consent of instructor.

138M Music as Expressive Culture (4). Fundamental requirements for development of a musical tradition. Guiding structural principles which must be agreed upon for new forms of expression to be understood and accepted. How members of society develop their own individual musical cultures and how these permit them to interact with the personal cultures of others.

138O Music and Society in the Ottoman Sphere (4). The unique character of Ottoman society created a musical culture which spread throughout much of Eastern Europe and into much of the Arabic speaking world. This influence is still clearly manifest in these regions as well as in Turkey. **(VIII)**

138P Music of Asia (4). A survey of the major music traditions of Asia and a consideration of the broad cultural and historical patterns which brought them about. Discusses the interaction and development of regional forms and communicates something of the value systems underlying these forms. **(VIII)**

138Q Latino Music: A View of Its Diversity and Strength (4). A survey of the musics of the many Latin cultures of the Americas including Mexico, Central and South America, as well as the Caribbean, and of those many Latin cultures which thrive and survive in the United States. Same as Chicano/Latino Studies 115A. **(VIII)**

138R Cross-Cultural Parameters of Popular Music (4). A consideration of popular music in the U.S. and abroad. How is pop defined and what does its evolution in other cultures tell us about our own pop music? The course will consider how the various cultures within the U.S. fit into the pop music scene, how they modify it today, and how they have in the past. **(VII)**

138S Music of Greater Mexico (4). A wide range of musics exist in Mexico, and in the Mexican traditions within the United States. From the indigenous traditions of Mexico and the ancient Aztec and Mayan civilizations through the Colonial and Revolutionary periods, the variety of Mexican music is explored. Same as Chicano/Latino Studies 115B. **(VIII)**

138T Africa and Afro-American Music (4). Africa's range of musical languages had a profound influence on the musics of the Americas. Covers sub-Saharan Africa and Afro-American musics of Latin America and the United States. Explores the survival of cultural characteristics and diffusion of musical ideas. **(VII)**

139 Special Topics in Cultural and Psychological Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

141A Ancient Civilizations of Mexico and the Southwest (4). The prehistory and cultural evolution of the civilizations which originated in Mexico, including the Olmecs, Aztecs, Toltecs, Maya, and Zapotec, as well as the Pueblos of the Southwestern U.S. Topics include the origins of food production and of the state, political and social history, ancient cities, and the Spanish conquest.

149 Special Topics in Archaeology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

150A Language and Social Cognition (4). Explores the relationship between language and cognition in social and cultural contexts. The overall goal is to think through how language structure and use impact how individuals perceive, think about, and understand the world around them.

161T Field Research: Asian Immigrants and Refugees in Orange County (4). Instruction in field work methodology via research projects involving the local communities of immigrants and refugees from Asia. Open only to School of Social Sciences majors. **(VII, IX)**

162A Peoples and Cultures of Latin America (4). Surveys the prehistory of Latin America and its indigenous cultures, emphasizing the impact of colonial rule, capitalism, and twentieth-century transformations. Emphasis on communities from several countries. In some years, emphasis on comparisons between the Latin American and Caribbean experiences. **(VIII)**

162B Indian North America (4). A survey of indigenous peoples in North America: American Indians, Alaska Natives, First Nations, Native Americans. Tribal populations and geographic distributions, political and social organization, sovereignty, self-determination, intergovernmental relations; cultural continuity and change; management, preservation, development of environments/resources. Prerequisite: satisfaction of the lower-division writing requirement. **(VII)**

163A Peoples of the Pacific (4). The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia. **(VIII)**

163I Transforming China (4). Focuses on transformations in the everyday life in post-socialist China. Explores topics including privatization, consumerism, urbanization, rural development, national and ethnic identities, religion, family, gender, sexuality, medicine, food, pop culture, transnationalism, and globalization. **(VIII)**

163K Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as East Asian Languages and Literatures 130 and Sociology 175A. **(VIII)**

164A African Societies (4). Comparative studies of the cultures and societies of Sub-Saharan Africa, with emphasis on critical study of colonialism and postcoloniality, social transformation, and the politics of identity. Prerequisite: Anthropology 2A.

164P Peoples and Cultures of Post-Soviet Eurasia (4). Examines the cultures and political conflict of the more than 130 indigenous ethnic groups in the European and Asian territories of the former U.S.S.R. Emphasis is on the theoretical issues of ethnicity, nationalism, and conflict management. Same as Political Science 154F. **(VIII)**

169 Special Topics in Area Studies (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

174A Human Complexity: World Cultures (4). Introduction to ethnology/ethnography, comparative research and theory, culminating in processes of discovery and hypotheses testing using world cultural databases to which students can contribute. Prerequisite: satisfactory completion of the lower-division writing requirement. **(VIII)**

176A Exploring Society Through Photography (4). Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques or the digital equivalent. Same as Social Science 182A and Sociology 114A. **(IX)**

179 Special Topics: Methods and Formal Representations (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

SPECIAL COURSES

180A Anthropology Majors Seminar (4-4-4). A course in anthropological theory designed especially for majors in Anthropology. Different issues are considered in different years. Prerequisite: Anthropology major only or consent of instructor.

190 Senior Thesis (4). May be taken a total of three times. Prerequisite: consent of instructor.

H190A Honors Research Workshop (4) F. Students articulate the goals and significance of their research projects. Written work consists of an eight- to fifteen-page research proposal, due by quarter's end, describing the research question, the relevant literature, and methods of data collection and analysis. Prerequisites: open only to students in the Honors Program in Anthropology; consent of instructor.

H190B Honors Field Research (4) W. Students begin or continue ethnographic field research that combines exploratory field research (e.g., participant-observation, interviews, study of archival and documentary materials) with fixed format data collection methods (e.g., standardized interviews, behavioral observations). Prerequisite: Anthropology H190A; consent of instructor.

H191 Honors Senior Thesis (4) S. Student drafts a senior honor thesis (typically) with the following sections: problem statement, literature review, ethnographic background, description of the methods, results, and conclusions. Prerequisites: Anthropology H190A, H190B; satisfaction of the lower-division writing requirement; consent of instructor.

197 Field Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Group Directed Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

GRADUATE

202A-B-C Proseminar in Anthropology (4-4-4). Year-long intensive introduction to the history of anthropological thought and reading in classical and contemporary ethnography for first-year graduate students. Prerequisite: graduate standing or consent of instructor.

204A Proseminar in Medicine, Science, and Technology (4). Explores how the phenomena studied by "medical anthropology" and "science and technology studies" are inextricably linked, and how understanding these formations requires moving between disparate fields of inquiry.

208A Anthropological Fieldwork Methodology (4). A survey of anthropological fieldwork methodology techniques, including attention to contemporary analysis of fieldwork. Prerequisite: graduate standing or consent of instructor.

211A Statistics and Research Design (4). Introduces basic concepts of research design for anthropology in conjunction with relevant concepts from the field of statistics, which will be learned in conjunction with the research designs that require use of those methods. Prerequisite: graduate standing.

212A Research Design and Data Analysis (4). Introduces advanced concepts of research design for anthropology, presents statistical models for multivariate analysis and for analysis of systems of relationships, and includes practice in sampling and data analysis. Prerequisite: graduate standing.

221A Family and Life History (4). Interdisciplinary and comparative work in family and life history. Prerequisite: graduate standing or consent of instructor. Same as Social Science 253A.

223A Research Design (4). Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant observations, behavior observations, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisite: graduate standing or consent of instructor. Anthropology 223A and Sociology 265 may not both be taken for credit.

225A Grant and Proposal Writing (4). Focuses on production, critique, and revision of student research proposals. A practical seminar designed to improve student proposals, help students through the application processes, and increase students' chances of obtaining support for their research. Prerequisite: graduate standing or consent of instructor. Same as Social Science 255C.

228A Anthropology of Encounters (4). Cultural encounters have long provided the ground for ethnographic research. This seminar refocuses on "encounter" not only as the material condition but also as a productive heuristic device in anthropological inquiry. Examines the reorientation of anthropology as a "global discipline."

229A Anthropology of Knowledge (4). Examines the politics of knowledge. Considers the long history of anthropological studies of a wide variety of knowledge forms and practices, as well as more recent feminist and postcolonial studies. Aims to investigate and enlarge normative definitions of knowledge and science.

230A Anthropology and History (4). An examination of the complex, long-standing relationship between anthropology and history. Themes include: history, culture, and colonialism; history and the power to represent; nostalgia and the uses of the past in struggles over "national history." Prerequisite: graduate standing or consent of instructor.

230D Ethnographies (4). Surveys changes in the character of ethnographic writing in the face of changing fields and topics of research. The emergence of new research terrains and the comparative contexts of ethnography are emphasized. Satisfactory/Unsatisfactory only.

231B Sociocultural Biologies (4). Explores the interrelationship of what can be provisionally called "the sociocultural" with what is conceived of as "the biological." Examines ontological, normative, and political economic processes as they impact notions of the body, eugenics, death, health, and disease. Prerequisite: graduate standing. Same as Chicano/Latino Studies 216.

232B Medical Anthropology (4). Explores historical and contemporary theoretical positions and debates in medical anthropology. Topics may include subjectivity, theories of the body, biopolitics, biomedical technologies, sexuality, pharmaceuticals, political economy and health, infectious disease and epidemics, health disparities, and humanitarianism.

235A Transnational Migration (4). The immigrant experience will be examined in order to explore how specific theoretical issues are examined empirically. These issues include ethnic enclave formation, gendered differences in migration and settlement, class differences, the migration of indigenous groups, identity formation, and issues of representation. Same as Social Science 254A and Chicano/Latino Studies 215.

236A Borders and Bodies: Places, Processes, and Transgressions (4). Examines borders and boundaries as material and semiotic constructs. Drawing upon an array of literatures, but loosely situated in U.S. geo/biopolitics, explores transformative troublings of places, spaces, borders, and bodies of all sorts. Same as Chicano/Latino Studies 214.

240A Economic Anthropology (4). Classic and contemporary theory in economic anthropology. Case studies from Latin America (primarily Mexico and the Andes), Africa, and the Pacific. Substantive topics include non-market exchange, markets and marketplaces, households, gender, management of common property (fisheries, pastoral lands, forests), labor, development, and change. Prerequisite: graduate standing or consent of instructor.

245A Seminar in Political Anthropology (4). Explores anthropological approaches to politics. Covers a range of issues and topics, including: theories of culture, power, and hegemony; approaches to colonial and post-colonial relations of global inequality; and ethnographic approaches to the modern state. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254H.

246B Law, Colonialism, and Nationalism (4). Origins and spread of law in colonial and nationalist contexts: law's role in constituting and policing difference. Recent theoretical approaches; property in things and people; human and indigenous rights; "customary" law; legal foundations of nationalism; resistance to/through law; globalization. Prerequisite: graduate standing.

247A Structuralism and Post-Structuralism (4). Traces recent theoretical discussions and arguments over the philosophical and historical "subject" from structuralist decenterings toward the characteristically "post-structuralist" contemporary concern with the historical and political constitution of subjectivities and subject positions. Prerequisite: graduate standing or consent of instructor.

248A Approaches to Globalization (4). Historical and contemporary approaches to the world economy, emphasizing anthropological questions of culture, power, identity, inequality. Examines "neo-imperialism," "late capitalism," accumulation, global markets, urban space, the state, business and policy globalization discourse, "local" responses to and instantiations of the "global." Prerequisite: graduate standing or consent of instructor. Same as Social Science 254L.

250A The Cultural Politics of Visual Representation (4). Develops a theoretical framework for analyzing and reading visual images. Images, as cultural productions, are steeped in the values, ideologies, and taken-for-granted beliefs of the culture which produced them and a political economy that is class, race, and gender inflected.

252A Queer Anthropology (4). Explores historical and contemporary scholarship that employs ethnographic approaches to address the discursive construction of sexuality. Also examines how the discipline of anthropology has been shaped by the study of sexuality. Prerequisite: graduate standing or consent of instructor.

253A Design, Aesthetics, and Social Life (4). Anthropology has only recently recognized that design demands consideration as a cultural form linked to, yet nonetheless distinct from, other aesthetic endeavors. Course is largely oriented toward collaboratively working out a conceptual basis for a distinctly anthropological approach to design.

259A Dissertation Writing Seminar (4). Intended for advanced, post-fieldwork Anthropology graduate students. Emphasis on the presentation of research design and results, problems of ethnographic writing, and qualitative and quantitative data and analysis. Prerequisites: post-fieldwork; graduate standing in Anthropology or consent of instructor.

289 Special Topics in Anthropology (4). Special topics vary from quarter to quarter. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

290 Dissertation Research (4 to 12). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

299 Independent Study (4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

DEPARTMENT OF CHICANO/LATINO STUDIES

383 Social Science Tower; (949) 824-7180
http://www.socsci.uci.edu/clstudies
Louis DeSipio, **Department Chair**

Undergraduate Program

Chicano/Latino Studies is an interdisciplinary department organized to provide undergraduate and graduate students with the opportunity to examine the historical and contemporary experiences of Americans of Latino origin or ancestry. This diverse population includes people who trace their heritage to Mexico, Puerto Rico, Cuba, El Salvador, Guatemala, Nicaragua, and other Latin American and Caribbean nations. The curriculum is designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, drama, film, music) accomplishments of Chicano/Latino communities. The Department offers a B.A. degree in Chicano/Latino Studies, an undergraduate minor, and a graduate emphasis.

Change of Major. Students who wish to change their major to Chicano/Latino Studies should contact the Department office for information about change of major requirements, procedures, and policies. Information is also available at http://www.changeofmajor.uci.edu.

Center for Research on Latinos in a Global Society

The Department is affiliated with the Center for Research on Latinos in a Global Society (CRLGS). Its multifold goals are (1) to examine the emerging role of Latinos as actors in global economic, political, and cultural events; (2) to promote Latino scholarship; (3) to enhance the quality of research in Latino studies; (4) to provide a forum for intellectual exchange and the dissemination of research finding; and (5) to promote the participation of undergraduate and graduate students in research on Latino issues. The use of the term "global society" underscores the faculty's perception that, as a society, the United States is becoming "globalized," meaning that it is increasingly affected by worldwide economic, political,

demographic, and cultural forces and that Latinos are at the center of this. Latinos in the United States, individually and as a sociopolitical group, play important roles in the multiple processes—immigration, trade, international capital flow, and international political movements—which are changing the traditional demarcation between domestic and foreign, and national and international politics, economics, and society.

Scholarship Opportunities

The **Jeff Garcilazo Fellowship/Scholarship Fund**, established in honor and memory of the late Chicano/Latino Studies and History professor, provides opportunities for students to examine the historical and contemporary experiences of Latino communities. The Jeff Garcilazo Prize is awarded annually to the undergraduate student author(s) of the best research paper(s) in Chicano/Latino Studies.

The **Hispanic Scholarship Fund (HSF)**, formerly the National Hispanic Scholarship Fund, awards scholarships annually to students enrolled in and attending an accredited college full-time from the fall through the spring (or summer) terms. More information is available at http://www.hsf.net/.

CAREER OPPORTUNITIES

Chicano/Latino Studies graduates have used their degrees as the foundation for careers in public service, social service, education, the corporate world, and the law. Many also go on to earn M.A. and Ph.D. degrees in Social Science and Humanities disciplines at major universities throughout the nation. What links all of these careers is that the Chicano/Latino Studies major prepares its students for careers that will speak of the needs of Chicano and Latino communities nationwide and globally. The highest number of the Department's majors have pursued advanced degrees and professional degrees, such as law degrees or advanced teaching credentials. Their training at UCI has served them well in that the list of institutions that they are attending include the nation's best, such as Harvard University, Stanford University, Columbia University, and several University of California campuses.

Others have moved directly into the workforce. Interestingly, many have selected careers that offer the opportunity to ensure that younger Latinos are able to seize the same opportunities the Department's students did and attend four-year colleges and universities. Chicano/Latino Studies majors work as primary and secondary school teachers, work for advocacy organizations focusing on Latino health and children's services, and have taken positions in legislative offices both in California and in Washington, D.C.

REQUIREMENTS FOR THE B.A. DEGREE IN CHICANO/LATINO STUDIES

University Requirements: See pages 55–62.

School Requirements: See page 460.

Departmental Requirements for the Major

A. Five core courses: Chicano/Latino Studies 61, 62, 63, 101, 102.

B. Spanish 2A or its equivalent; students are encouraged to continue their Spanish language education through Spanish 2C.

C. One comparative ethnic studies course selected from either African American Studies, Asian American Studies, or Education 124. Course must focus on the study of African American or Asian American communities in the United States.

D. Four upper-division electives, one from each of the following categories: Literature, Arts, and Media (Chicano/Latino Studies 110–129); History (Chicano/Latino Studies 130–139); Inequalities Across Gender, Sexuality, Class, and Race (Chicano/Latino Studies 140–159); Health, Education, and Public Policy (Chicano/Latino Studies 160–189).

E. Three additional elective courses, two of which must be upper-division, selected from Chicano/Latino Studies courses. Electives may include Independent Study courses (Chicano/Latino Studies 199). Students may obtain credit for one of these three courses through participation in a study abroad program in Mexico. Students must consult with the Department office for additional information regarding this option.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI. Courses taken through the UC Education Abroad Program will be counted toward satisfaction of the residence requirement.

Optional Independent Research Project

Students are encouraged to pursue field research and write a substantial research paper on topics of their choice under the guidance of Chicano/Latino faculty members. Often, this project will grow out of issues examined in Chicano/Latino Studies 102 (Research Seminar). Research projects typically involve a combination of library research and fieldwork in the Chicano/Latino community. Methods and analytical frameworks vary depending on the student and faculty advisors. Interested students should enroll in Chicano/Latino Studies 199 (Independent Study).

Honors Program in Chicano/Latino Studies

The Honors Program in Chicano/Latino Studies is designed to allow undergraduates to pursue independent research and write an honors thesis on topics of their choice under the guidance of Chicano/ Latino Studies faculty members. Research projects typically involve a combination of library research, data analysis, and field research. The program is open to all senior Chicano/Latino Studies majors with a grade point average of 3.3 or better overall, with 3.5 in Chicano/ Latino Studies courses (at least five courses). Prior completion of or concurrent enrollment in Chicano/Latino Studies 101 (Research in the Latino Community) is strongly recommended. Successful completion of the Honors Program and the honors thesis satisfies the upper-division writing requirement.

Although course work for the Honors Program does not start until the senior year, it is highly recommended that during the spring quarter of the junior year, students find a professor willing to serve as their research project advisor on the basis of a mutually acceptable abstract that indicates the goal and significance of their project. If extensive research is to be undertaken at this time, students should enroll in Chicano/Latino Studies 199.

During the fall quarter of the senior year, students enroll in Chicano/Latino Studies H190A and write a proposal describing their research question, the relevant background literature, and the method of data collection and analysis. Field work for the project may begin during this quarter.

In the winter quarter of the senior year, students begin or continue their research by enrolling in Chicano/Latino Studies H190B. In the spring quarter of the senior year, students enroll in Chicano/ Latino Studies H190C and complete a senior honors thesis.

Requirements for the Minor

Completion of three core courses: Chicano/Latino Studies 61, 62, 63; three upper-division courses selected from Chicano/Latino Studies 100–189; and Spanish 2A or its equivalent.

Residence Requirements for the Minor: Other than the language requirement, no more than two courses taken at other academic institutions may be used toward satisfaction of minor.

In addition to satisfying the requirements for the major or minor, students are encouraged to take advantage of the variety of unique educational opportunities available at UCI. Through the Education Abroad Program (EAP), students receive academic credit while

studying at universities in Mexico, Chile, Costa Rica, Brazil, or Spain. Internship opportunities with private and public institutions concerned with the Chicano/Latino communities are available in Orange County, Sacramento, and Washington, D.C. Independent research with faculty on Chicano/Latino issues is also encouraged. Student research is conducted and given academic credit through independent study or group research courses. The Undergraduate Research Opportunities Program (UROP) and the Summer Academic Enrichment Program (SAEP) are examples of programs at UCI which allow students to work as research assistants with professors.

Graduate Program

Participating Faculty

Catherine L Benamou: Good Neighbor cinema, cinemas of Brazil, Cuba, and Mexico, transnational television and its Latina/Latino diasporic audiences *Latina/Latino public sphere, mediated representations of immigration an* exile

Belinda Campos: Relationships, emotion, physical and mental health in Latino populations

Leo R. Chávez: International migration, Latin American immigrants, medical anthropology, transnational communities, cultural analysis of popular images

Gilberto Q. Conchas: Inequality with emphasis on urban schooling systems

Louis DeSipio: American politics, ethnic politics, Latino politics and public policy

Cynthia Feliciano: Race/ethnicity, education, immigration

Raúl Fernández: Economic and cultural transactions between the U.S. and Latin America

Gilbert González: Ethnic/Chicano historical studies, the political economy of education and Latin American studies

Rodrigo Lazo: U.S. literature and the Americas; Latino studies; U.S. immigrant literature; the nineteenth century; Cuba and Cuban American studies

Michael J. Montoya: Social inequality and health; race and ethnicity; social and cultural studies of science, technology, and medicine; the participation of ethnic populations in biomedical research; the U.S./Mexican border, critical bioethics

Alejandro Morales: Latin American and Chicano literature, film studies, creative writing

Leticia Oseguera: Stratification of American higher education, the civic role of higher education, college transitions, and baccalaureate degree attainment for underrepresented groups

Ana Rosas: Labor history, immigration, family studies

Vicki L. Ruiz: Twentieth-century U.S. history specializing in Chicana/Chicano studies, Latina history, oral narratives, gender studies, labor, and California and the West

Rodolfo D. Torres: Urban politics, the State and class structures, studies in racism and inequality, poverty and social policy

Deborah Vargas: Chicana/Latina cultural production; racialized sexualities; transnational feminisms; cultural studies; popular culture

James Diego Vigil: Urban, psychology, socialization and educational anthropology, sociocultural change, urban poverty, Mexico and U.S. *Southwest ethnography, and comparative ethnicity*

Maria Estela Zarate: College-access issues, Latino educational issues, and education policy

GRADUATE EMPHASIS IN CHICANO/LATINO STUDIES

The Department of Chicano/Latino Studies offers a graduate emphasis in Chicano/Latino Studies, which is available in conjunction with the Ph.D. programs in the Departments of Anthropology; Criminology, Law and Society; Education; English; History; Political Science; Planning, Policy, and Design; Sociology; Spanish and Portuguese; and Women's Studies; and the program in Social Science. Satisfactory completion of the emphasis is certified by the Chair of Chicano/Latino Studies and is noted in the student's dossier.

ADMISSION TO THE GRADUATE EMPHASIS

Applicants must first be admitted to, or currently enrolled in, one of the participating programs listed above. Applicants must submit to the Chicano/Latino Graduate Program Committee (1) an application form listing prior undergraduate and graduate course work related to Chicano/Latino Studies (if any), institutions attended, and major(s); and (2) a one- to two-page statement of purpose, including career objectives, areas of interest and research, and record of research, teaching, community, and/or creative work.

The Committee determines admissions, in consultation with the Chicano/Latino Studies core faculty, based upon the extent to which the applicant's research interests relate to Chicano/Latino Studies, the applicant's previous course work, and research or other experience related to Chicano/Latino Studies. Lack of prior course work does not preclude admission, so long as the statement of research interests is congruent with the graduate emphasis and makes a compelling case.

GRADUATE EMPHASIS REQUIREMENTS

Minimum course work for the graduate emphasis in Chicano/Latino Studies consists of four courses: two core courses, Chicano/Latino Studies 200A and 200B, a coherent sequence normally taken in consecutive quarters; and any two courses selected from the list of graduate courses in Chicano/Latino Studies.

For doctoral students, the qualifying examination and dissertation topic should incorporate U.S. Latinos and/or issues relevant to Chicano/Latino Studies as a central focus of analysis. One member of the candidate's dissertation committee should be a core or affiliate faculty of the Chicano/Latino Studies Department.

Courses in Chicano/Latino Studies

***(Schedule of Classes* designation: Chc/Lat)**

LOWER-DIVISION

61 Introduction to Chicano/Latino Studies I (4). An introduction to the study of the historical foundations of the Chicano/Latino experience. Addresses such topics as empire, migration, immigrant settlement, economic integration, race, gender, and the formation of group identities. **(III, VII)**

62 Introduction to Chicano/Latino Studies II (4). Provides an introduction to the arts, literature, and culture of Chicano/Latino communities. Analyzes representations of and cultural production in Chicano/Latino communities through such media as folklore, literature, art, film, architecture, dance theatre, performance, music, poetry, mass media, and language. **(III, VII)**

63 Introduction to Chicano/Latino Studies III (4). Examines contemporary public policy issues in Chicano/Latino communities. Each offering addresses at least three of the following themes: migration, immigrant incorporation, identity construction, language policy, health policy, politics, sexuality, gender, labor, class, and education. **(III, VII)**

64 Introduction to Race and Ethnicity in Political Science (4). Examines major theories that attempt to explain the roles of race and ethnicity in U.S. politics, while also looking at the political attitudes and behaviors of ethnic and racial populations in order to measure their contemporary political influence. Same as Political Science 61A. **(III, VII)**

65 Ethnic and Immigrant America (4). Focusing on Asian, Latino, and Black immigrant groups, examines the second generation's experience of straddling two cultures and growing up American. Covers topics such as assimilation, bilingualism, race relations, education, bicultural conflicts, interracial marriage, and multiracial identities. Same as Sociology 68A. **(VII)**

UPPER-DIVISION

101 Research in the Latino Community (4). Students engage in firsthand research in the local Orange County environment. Students identify a research problem, conduct a literature review, develop questions and/or hypotheses, appropriate methods, and write a proposal. Prerequisites: two courses from Chicano/Latino Studies 61, 62, 63, and two courses from Chicano/Latino Studies 110–189, or consent of instructor.

102 Chicano/Latino Research Seminar (4). Taught as a writing and research seminar in Chicano/Latino Studies. Student develops own project; engages in peer editing; drafts, writes, and presents paper at spring research conference. Prior course work in Chicano/Latino Studies helpful, i.e., Chicano/Latino Studies 61, 62, 63. Prerequisites: Chicano/Latino Studies 101, satisfactory completion of the lower-division writing requirement, and upper-division standing. **(VII)**

110–129: LITERATURE, ARTS, MEDIA, CULTURE

110A, B Chicano Literature (4, 4). Focus on contemporary Chicano literature, in relation to Chicana literature, women's literature, American literature, and Latino literature. Prerequisites: Spanish 3A and 3B, or consent of instructor. Same as Spanish 140A, B. **(VII)**

111A Critical Issues in Chicano Studies (4). A critical survey of social science literature on the Chicano experience and a general discussion of the various models and theories applied by social scientists to the study of oppressed national minorities. Discussion of race and class within the context of the Chicano experience. **(VII)**

111B Chicano Culture (4). Current research and perspectives on different aspects of Chicano culture: political, economic, sociological, artistic, and folkloric. Prerequisites: Spanish 3A and 3B, or consent of instructor. May be taken for credit twice as topics vary. Same as Spanish 142. **(VII)**

114 Film Media and the Latino Community (4). Uses film as a resource for understanding contemporary issues and problems facing the Chicano/Latino community. (Does not study cinema as a genre.) Same as Social Science 173G. **(VII)**

115A Latino Music: A View of Its Diversity and Strength (4). A survey of the music of the many Latin cultures of the Americas including Mexico, Central and South America, as well as the Caribbean, and of those many Latin cultures which thrive and survive in the United States. Same as Anthropology 138Q. **(VIII)**

115B Music of Greater Mexico (4). A wide range of musics exists in Mexico, and in the Mexican traditions within the United States. From the indigenous traditions of Mexico and the ancient Aztec and Mayan civilizations through the Colonial and Revolutionary periods, the variety of Mexican music is explored. Same as Anthropology 138S. **(VIII)**

115C Afro-Latin American Music (4). Musical culture of Afro-Latin American peoples, emphasizing Spanish-speaking Caribbean. Topics include: background in West Africa, the persistence of traditions in the Caribbean, the commercial music of the twentieth century, the connections between musical culture, religion, and the economy. Same as Social Science 176A. **(VIII)**

116 Reading Images Culturally (4). Students are provided with the analytical tools necessary to undertake research on visual representations. Images, as cultural productions, are steeped in the values, ideologies, and taken-for-granted beliefs of the culture which produced them. Of concern are representations of race, identity, gender, and the "Other." Same as Anthropology 137A. **(VII)**

119 Chicana, Chicano/Latina, Latino Cultural Studies (4). Explores sites of cultural production within the scholarship area of Chicano/Latino Cultural Studies. Considers questions pertaining to social structural processes as they relate to cultural productions and considers potential political strategies for challenging inequality within cultural sites. **(VII)**

121 Latina/Latino Pop: Latina/Latino Popular Culture (4). With a focus on the politics of language and space/place, prepares students to critically analyze sites of Latina/Latino popular culture including: music, film, performance, sports, media, and varied subcultures.

122 Engaging Latino Issues in Media (4). This writing course is designed to address contemporary issues related to *Latinidad* and Latinos according to a variety of media forms including commercial and independent news sources, talk shows, and Internet sites. Issues range from immigration to electoral politics. Prerequisites: satisfactory completion of the lower-division writing requirement; upper-division standing or consent of instructor. Formerly Chicano/Latino Studies 136. **(VII)**

129 Special Topics in Literature, Arts, Media, Culture (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

130–139: HISTORY

130 Introduction to Cuba: History, Culture, and Society (4). Introduction to Cuban history, culture, and society using social science texts, visual and musical materials. Examines major historical moments including the historical relationship between the United States and explores evolution of Cuban music from the earliest times to present. Same as International Studies 177F and Social Science 173Q. **(VIII)**

132A Chicana/Chicano History: Pre-Colonial to 1900 (4). Examines social history of the Southwest region from antiquity to 1900. Discusses major questions, theory and research methods pertinent to Chicanas/Chicanos. Themes include: indigenous empires, conquest, colonialism, social stratification, ideology, marriage, sexuality, industrial capitalism, accommodation and resistance. Same as History 151A. **(VII)**

132B Chicana/Chicano History: Twentieth Century (4). Examines social history of the Southwest with emphasis on Mexican-origin people. Discusses major questions, theory, and research methods pertinent to Chicana/Chicano history. Themes explored include: immigration, xenophobia, class struggle, leadership, generational cohorts, unionization, education, barrioization, ethnicity, patriarchy, sexuality. Same as History 151B. **(VII)**

133B Twentieth-Century Mexico (4). Examines the history of contemporary Mexico beginning with the Mexican Revolution and concluding with the present administration. Social, economic, and political effects of the Revolution; formation of a "one-party democracy"; economic transformation of the nation; the present crisis. Same as History 161C. **(VIII)**

134 U.S. Latino Literature and Cultures (4). Focuses on some aspect—literature, art, cultural production, history—of the multifaceted Latino cultures that have developed within the United States. Can focus on one group, such as Caribbean Americans, Chicanos, Central Americans, or take a comparative perspective of several groups. Prerequisites: Spanish 3A and 3B, or consent of the instructor. Same as Spanish 110C. **(VII)**

135 Latinas in the Twentieth-Century U.S. (4). Latinas in the U.S. from 1900 to present, offering a diversity of their cultures, regional histories, sexualities, generations, and classes. Same as History 151C. **(VII)**

137 Comparative Latino Populations (4). Provides foundation for understanding of Chicano/Latino Studies as an interdisciplinary field of inquiry. Focus on the history, arts, cultures of distinct (Mexican, Cuban, Puerto Rican, Central American) Latino communities. Topics include: precolonial history and culture, conquest, mestizaje, colonialism/neocolonialism, resistance. Same as Social Science 173K. Formerly Chicano/Latino Studies 103. **(VII)**

138 Chicano/Chicana Labor History (4). Examines origins of Latino/Latina labor from colonial period to present. Emphasis on the issues of race, culture, class, and gender. Focus on processes and institutions including: encomienda, migration, unions, informal economies, Bracero program, domestic work. Same as Social Science 167. Formerly Chicano/Latino Studies 141. **(VII)**

139 Special Topics in Chicano/Latino History (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

140–159: INEQUALITIES, GENDER, SEXUALITY, CLASS, RACE

140A Latina/Latino Queer Sexualities (4). Introduces students to the notion of "queer" in relation to Chicanas/Chicanos and Latinas/Latinos and provides students with theoretical frameworks to explore the shifting categories of sexuality, gender, Chicano, Latino within the scholarship areas of Chicana/Chicano and Latina/Latino Studies.

142 Latinos and the Law (4). Examines a range of theoretical, empirical, and policy approaches to legal issues affecting the Latino population, with emphasis on California. Discusses topics concerning the purpose of law, the creation of law, and the enforcement of law. Same as Criminology, Law and Society C171. **(VII)**

143 Mexican-Americans and Politics (4). Examines political development of Mexican-Americans. Topics include their "territorial" roots in the Southwest, demographics, political leadership and organization; policy issues of immigration, bilingualism, education, and economics; relations with other minority groups; the role of Mexican-Americans in U.S.-Mexico relations. Same as Political Science 126A. **(VII)**

147 Comparative Minority Politics (4). Examines the political experiences of Blacks, Latinos, and Asian Americans in the United States from roughly 1950 to the present. Focuses on how each group has pursued political empowerment via both conventional political channels and social movements. Same as African American Studies 151, Asian American Studies 132, and Political Science 124C. **(VII)**

148 Racial and Ethnic Relations in the United States (4). Examines central questions and issues in the field of race and ethnicity; the emergence, maintenance, and consequences of the ethnic and racial stratification system in the United States; the future of racial and ethnic relations; and relevant public policy issues. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Sociology 167A.

151 Latinos in U.S. Politics (4). Comparing the political issues facing Latino groups by examining their migration histories, voting behavior, nonelectoral participation, and policy issues. Latino issues are examined on the national, state, and local levels, including formal representation, immigration, affirmative action, and language policy. Same as Political Science 124B. **(VII)**

152 Race and Citizenship in America (4). The role U.S. citizenship policy has played in the social construction of race. Looks comparatively at citizenship experiences of different racial/ethnic groups to understand how the meaning of being a U.S. "citizen" has varied over time and across groups. Same as Political Science 124D. **(VII)**

152A Race, Ethnicity, and Social Control (4). Provides a nuanced, sociological understanding of racial and ethnic group relations in contexts of criminal social control, and how social inequality, social movements, and social change manifest in these relations. Prerequisite: Criminology, Law and Society C7. Same as Criminology, Law and Society C161. **(VII)**

153 Cross-Cultural Research on Urban Gangs (4). Taking an urban policy approach, examines the background and contemporary traditions of gangs in several ethnic groups including African-, Asian-, and Mexican-Americans. Cross-cultural exploration of the varied facets of gang life. The major social-control institutions affecting them. Same as Criminology, Law and Society C156. **(VII)**

154 Latino Metropolis (4). Explores the processes of Latino urbanization in the United States and the spatialization of Latino identities, particularly in the context of Southern California with selected comparisons drawing from other cities. Same as Planning, Policy, and Design 172. **(VII)**

155 Culture Change and the Mexican People (4). Reviews culture contact and colonization, innovation diffusion, acculturation, assimilation, culture conflict and marginality, modernization, urbanization, legal transformations. Mexico and the Southwestern U.S. are reviewed through several centuries to better appreciate the indigenous base of the Mexican people. Same as Criminology, Law and Society C172. **(VII)**

157 The Chicana/Latina: A Psychosocial Perspective (4). Provides an in-depth psychosocial perspective of the Chicana/Latina experience in the U.S. Topics include the historical contributions of Latina women in Latino communities: Chicana feminist theories, gender roles and sexuality, ethnic identity, education, health, and models of multicultural counseling. Prerequisite: satisfactory completion of the lower-division writing requirement. Formerly Chicano/Latino Studies 173. **(VII)**

158 Chicana Feminisms (4). Surveys the development of Chicana feminist thought and practice. Focuses on historical contemporary writings by and about Chicana feminists. Draws from interdisciplinary scholarship in order to survey the diversity of Chicana feminisms. Prerequisite: satisfactory completion of the lower-division writing requirement. **(VII)**

159 Special Topics in Society, Labor, Politics, Law, Gender, Race, Ethnicity (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

160–189: HEALTH, EDUCATION, AND PUBLIC POLICY

160 Perspectives on the U.S.–Mexican Border (4). Economic aspects of the historical development of the U.S.-Mexican border. The current economic situation in the Southwest and border areas as it affects both Mexico and the Latino/Chicano population is also examined. Same as International Studies 177B and Social Science 173I. **(VII)**

161 Transnational Migration (4). Examines the movement of people across national borders, governmentality and the role of state practices to control populations, and issues of citizenship, belonging, and identity. Examples are drawn from the United States, Europe, Latin America, Asia, and Africa. Same as Anthropology 125X. **(VIII)**

163 U.S. Immigration Policy (4). Examines selected immigration policy debates since the nineteenth century, rationale and consequences of immigration law since 1965, problems of administration, implementation and enforcement, impact of immigration policy on foreign relations, and contemporary debate regarding the future of U.S. policy. Same as Political Science 126C. **(VII)**

165 Latin American and Latino Cultures I (4). Surveys the history, social and economic conditions, gender issues, problems of economic and social development in Latin America and their relation to U.S. Latinos. Topics include the colonial experience, economic relations with the U.S., Latin American migration to the U.S. Same as Social Science 172F. **(VIII)**

166 Chicano Movement (4). Explores the history of Mexicans in the U.S. with particular attention paid to their integration into the U.S. capitalist economy. Examines this economic history and the Chicano movement, "El Movimiento," within the wide context of socio-economic change. Same as Planning, Policy, and Design 177.

167 Latinos in a Global Society (4). Examines interconnections between diverse Latino groups in the U.S. and the effects of globalization on their social, cultural, political realities. Topics include: immigration, demographics, socioeconomic differentiation, familial relations, political protest/resistance, law and policy, and links to "homeland" issues. Prerequisite: Chicano/Latino Studies 137. Same as Social Science 173L. Formerly Chicano/Latino Studies 104. **(VII)**

168 Chicano/Latino Social Psychology (4). Examines theories, research, and major issues of relevance to understanding social psychological processes in Chicano/Latino populations. Topics include social development, cultural orientations, gender and sexuality, close relationships, happiness and well-being, stereotyping, prejudice and discrimination, and mental and physical health. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Psychology and Social Behavior 192Q. **(VII)**

170 Chicano/Latino Families (4). Introduction to research, literature, and issues surrounding the topic of Chicano/Latino families including cultural history, contemporary issues, organization of family, traditions, lifestyle, values, beliefs, generational differences, gender issues, ethnic identity, evolution of demographic patterns, current economic and political standings. Same as Social Science 165. Formerly Chicano/Latino Studies 144. **(VII)**

171 Chicano/Latino Psychology (4). Examines research and literature investigating Chicano/Latino ethnicity as a variable influencing behavior. Explores mental health needs and issues of Chicano/Latinos and discusses competent, sensitive methods of mental health service delivery. Same as Psychology 174F. Formerly Chicano/Latino Studies 145. **(VII)**

172 Culture and Health (4). Explores America's cultural diversity by examining differing systems of belief and behavior in relation to illness, curing, disease, practitioner behavior, and use of conventional medical services. Groups focused on include Native Americans, African Americans, Latinos, and Asians. Same as Anthropology 134D. Formerly Chicano/Latino Studies 146. **(VII)**

174 Multicultural Counseling (4). Covers both theories and application of multicultural counseling that are of greatest relevance to psychology. Topics include the historical foundations of multicultural counseling; theories and models of multicultural counseling; multicultural assessment and prediction; counseling and effective interventions for minorities. Prerequisite: satisfactory completion of the lower-division writing requirement. **(VII)**

176 Race, Gender, and Science (4). Perfect for pre-health, science, and social science majors wanting to appreciate how science and society interact. Race and gender as biological and socio-cultural constructs are examined. Questions explored: What is disease? What is science? What are social and biological differences? Same as Anthropology 128B. **(VII)**

177 Culture and Close Relationships (4). Examines cultural influences on close relationship processes including attraction, love, friendship, family, social support, and significance of close relationships for health and well-being. National and ethnic sources of cultural variation examined include Latin America, Asia, Africa, and the Middle East. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Psychology and Social Behavior 192R. **(VIII)**

178 Health and the Latino Paradox (4). Examines research and theories concerning the physical and mental health of U.S. Latino populations. Contemporary accounts, health care implications, and new directions for understanding sources of risks and resilience for health in Latino populations are evaluated and discussed. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Psychology and Social Behavior 192S. **(VII)**

179 Special Topics in Health, Medicine, and Psychosocial Dynamics (1 to 4). Prerequisites: vary. May be repeated for credit as topics vary.

180 History of Chicano Education (4). Examines the relationship between the development of the public education system and the Chicano community in the U.S. Same as Social Science 173H. **(VII)**

182 Latina/Latino Access and Persistence in Higher Education (4). Introduction to how social, political, and economic forces impact on Latina/Latino racial/ethnic minorities with regard to their access and persistence in the U.S. higher education system. Investigates historical perspectives and theoretical underpinnings of college access and retention research. Same as Education 182. **(VII)**

189 Special Topics in Educational Policy and Issues (1 to 4). May be repeated for credit as topics vary.

190–199: SPECIAL COURSES

H190A Honors Research Preparation (4). Students write a proposal describing their research question, the relevant background literature, and the method of data collection and analysis. Field work for the project may begin during this quarter. Prerequisites: open only to students in the Honors Program in Chicano/Latino Studies; consent of instructor.

H190B Honors Field Research (4). Students begin or continue their research for their senior honors thesis. Prerequisites: Chicano/Latino Studies H190A; consent of instructor.

H190C Honors Thesis (4). Students draft a senior honor thesis (typically) with the following sections: problem statement, literature review, description of the methods, results, and conclusions. Prerequisites: Chicano/Latino Studies H190A-B; satisfactory completion of the lower-division writing requirement; consent of instructor.

191A-B-C HABLA: Language Intervention for Disadvantaged Children (4-4-4). Trains students (fall quarter) to deliver home visits (winter and spring) that promote school readiness among two–four year-olds from low SES and educational backgrounds. Covers fundamentals of child language, literacy, cognitive development; procedures, ethics of home visitation. Work with parents and children to create better home literacy and language environment. Prerequisites: must pass an interview by instructor, be fluent in English and one other language (Spanish most typically), must have experience with preschool children and be culturally sensitive. Same as Psychology 144A-B-C and Social Science 186A-B-C.

198 Group Directed Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topics vary.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE

200A Theoretical Issues in Chicano/Latino Research (4). Introduction to theoretical issues in the scholarship in Chicano/Latino Studies. Theories from social sciences, humanities, critical theory. Topics: immigration, identity, gender and sexuality, globalization, transnationalism, social, political, and economic integration, race theory, labor market participation, social history, cultural productions.

200B Problems and Methods in Chicano/Latino Research (4). Examines issues related to conducting research in Latino communities. Topics include problem definition, sampling, quantitative and qualitative methods, participant-observation, language and interviewing, immigration status, gender, participatory research, and communication with the larger community.

210A-B Cultural and Historical Precedents for Latinos and Medical Care (2-2). Introduction to the history of Latinos, focusing on relevant pre-Columbian, colonial, and modern social and cultural developments, including issues of race, gender, sexuality, religious beliefs, and health beliefs and practices. In-progress grading for 210A. Chicano/Latino Studies 210A-B and 212 may not both be taken for credit.

211A-B Latinos/Latinas and Medical Care: Contemporary Issues (2-2). Introduction to medical anthropological and social science perspectives on Latinos/Latinas in relation to a number of health and medically related issues, i.e., immigration, gender, reproduction, culture, social structure, political economy, sexuality, utilization of medical services, and health beliefs. Chicano/Latino Studies 211A-B and 213 may not both be taken for credit.

214 Borders and Bodies: Places, Processes, and Transgressions (4). Examines borders and boundaries as material and semiotic constructs. Drawing upon an array of literatures, but loosely situated in U.S. geo/biopolitics, explores transformative troublings of places, spaces, borders, and bodies of all sorts. Same as Anthropology 236A.

215 Transnational Migration (4). The immigrant experience will be examined in order to explore how specific theoretical issues are examined empirically. These issues include ethnic enclave formation, gendered differences in migration and settlement, class differences, the migration of indigenous groups, identity formation, and issues of representation. Same as Anthropology 235A and Social Science 254A.

216 Sociocultural Biologies (4). Explores the interrelationship of what can be provisionally called "the sociocultural" with what is conceived of as "the biological." Examines ontological, normative, and political economic processes as they impact notions of the body, eugenics, death, health, and disease. Prerequisite: graduate standing. Same as Anthropology 231B.

217 Street Ethnography (4). Focuses on urban populations, especially gangs, and outlines some of the major conceptual and theoretical issues related to this topic and the processes of street socialization. Methods of inquiry include mapping, ethnohistory, survey questionnaires, and other quantitative techniques. Prerequisite: graduate standing or consent of instructor. Same as Criminology, Law and Society C222.

218 Latina/Latino Sexualities (4). Seeks to critically engage key shifts in the field of Latina/Latino sexualities. Engages key words through scholarship that has come to represent the field of study now referred to as Latina/Latino sexualities. Prerequisite: graduate students only or consent of instructor.

221 Race, Ethnicity, and Social Control (4). Origins and organization of racialized social control, with emphasis on criminal justice. Racial politics of criminal/juvenile justice considered in comparative (historical and international) perspective. Exploration of theoretical and methodological issues for research on race, ethnicity, and social control. Prerequisite: graduate standing or consent of instructor. Same as Criminology, Law and Society C241.

235 U.S. Ethnic Politics (4). Assesses theories of ethnic political attitudes and behaviors in U.S. politics and examines methodological approaches to testing theories of ethnic politics. The primary focus is contemporary ethnic politics with attention to ethnic politics in American political development. Prerequisite: graduate standing or consent of instructor. Same as Political Science 245A.

289 Special Topics in Chicano/Latino Studies (1 to 4). Current research in Chicano/Latino Studies. May be repeated for credit.

299 Independent Study (4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

DEPARTMENT OF COGNITIVE SCIENCES

2201 Social & Behavioral Sciences Gateway; (949) 824-3771
Michael D'Zmura, **Department Chair**

The Department of Cognitive Sciences is committed to the investigation of the abstract, complex structures that underlie human cognition: language, thought, memory, learning, sensorimotor integration and perception. The main areas of research strength within the Department are visual and auditory perception, experimental psychology, cognitive psychology, mathematical psychology, and cognitive neuroscience.

Undergraduate Program

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in general psychology including the areas of development, clinical,

perception, learning, memory, cognitive processes, and neuroscience are advised to consult the course listings here in the Department of Cognitive Sciences section. These courses are designed to provide students with a strong foundation in general psychology. Students interested in other areas of psychology are advised to consult the course listings in the School of Social Ecology and the School of Biological Sciences sections.

In anticipation that the number of students who are qualified to elect Psychology as a major will exceed the number of positions available, students applying for admission for fall 2011 should be sure to file their application before November 30, 2010.

Change of Major: Information about change-of-major requirements, procedures, and policies is available in the School of Social Sciences Undergraduate Counseling Office and at http://www.changeofmajor.uci.edu.

Excellence in Psychological Research: Psychology majors doing independent research under Psychology 199 may be eligible for participation in the Undergraduate Research Opportunities Program (UROP). Participants can obtain research funding and have the opportunity to have their research papers published in a peer-reviewed student journal or to present them at a special conference of UCI student research. Guidelines for the program are available from the Department of Cognitive Sciences office.

REQUIREMENTS FOR THE B.A. DEGREE IN PSYCHOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 460.

Departmental Requirements for the Major

School requirements must be met and must include 18 courses (70 units) as specified below:

A. Psychology 9A, B, C.

B. Two introductory courses (eight units) in the social sciences chosen from Anthropology 2A, 2B, 2D, Economics 1, Linguistics 3, Political Science 6C, Social Science 5A, Sociology 1, or one or two quarters of Social Science H1E, H1F, or H1G, when topic is not psychology.

C. A one-quarter course and laboratory in experimental psychology or research methods selected from Psychology 112A and 112LA, 112M and 112LM, 112P and 112LP, or 112R and 112LR.

NOTE: These courses have as prerequisites Psychology 9A, B, C and one year of mathematics/statistics (see course listings). These prerequisites are strictly enforced. Psychology 112A, 112LA are the first quarter of a multi-quarter sequence that satisfies the upper-division writing requirement and allows students to plan and conduct research projects. Students taking these courses should plan to continue in them through at least the second quarter. Students who intend to fulfill the upper-division writing requirement in some other way should consider taking Psychology 112M and 112LM, 112P and 112LP, or 112R and 112LR to fulfill the laboratory requirement.

D. Four upper-division Psychology core courses are required (16 units). These courses are designated with the ending number "0" and include the following: Psychology 120A, 120D, 120H, 120P, 130A, 140C, 140L, 140M, 160A, 160D.

E. Seven additional courses (four or more units each) with emphasis in psychology, distributed as follows:

1. No more than one of the seven may be lower-division. Psychology 7A and 46A may not be used to fulfill this requirement.
2. Three of the upper-division courses used to satisfy requirements D and E must be taken from one of the following modules: Psychology 110–119 (Research Methodologies), 120–129 (General Psychology), 130–139 (Perception and Sensory Processes), 140–149 and 150–159 (Learning and Cognition and Language Sciences combined), 160–169 (Cognitive Neuroscience), and 170–179 (Interdisciplinary Studies).
3. Certain courses offered in the School of Biological Sciences and the School of Social Ecology may be used in partial satisfaction of this requirement. A total of three of these courses (12 units) may be used in this way with a maximum of two from either of these Schools.

   The courses that may be used in this way are those in the Department of Cognitive Sciences' course listings numbered Psychology 127, 147, and 177, as well as Psychology and Social Behavior P164S (same as Criminology, Law and Society C105) and Biological Sciences D137, E174, N110, and N159.
4. No more than three of the courses (each of four or more units) may be numbered 190–199.

NOTE: Psychology majors are strongly encouraged to take Biological Sciences 1A-B and 35 in satisfaction of the science and technology portion of the general education requirement (category II). Furthermore, it is strongly recommended that students who intend to pursue postbaccalaureate work in psychology take the Psychology 112A-B-C sequence. Most psychology graduate programs require statistics (which, at UCI, may be satisfied by taking Psychology 10A-B-C or Social Science 10A-B-C), but some require calculus (which, at UCI, may be satisfied by taking Mathematics 2A-B).

Honors Program in Psychology

The two-year honors program in Psychology is open to selected juniors who are majoring in Psychology. It provides thorough grounding in research methods and culminates with the opportunity for basic research in some area of psychology under faculty supervision. The program has a limited number of openings and seeks to attract outstanding students who plan to undertake postgraduate education in some field of the psychological sciences. Admission to the program is based on a formal application that is normally submitted in the spring quarter of the sophomore year. Applicants should have an overall grade point average of at least 3.2 and a grade point average of at least 3.5 in psychology courses, although this requirement may be waived in unusual cases.

During the junior year, students who participate in the program are expected to enroll in Honors Experimental Psychology (H111A-B-C), and in the fall quarter of the Honors Seminar in Psychology (H101A). As seniors, following successful completion of these junior-year requirements, Psychology honors students are enrolled in the Honors Seminar in Psychology (H101B-C) in the fall and spring quarters. Participants in the honors program are expected to complete course work beyond the general education requirement in one or more of the following areas: biological sciences, mathematics, computer science, physical science, linguistics, philosophy. The honors seminar may be used to satisfy two of the courses required by Part E of the Psychology major requirements. To graduate with Honors in Psychology, a student must successfully complete the requirements for the B.A. degree in Psychology with an overall grade point average of 3.2 and a grade point average of at least 3.5 in Psychology courses. In addition, Honors students must successfully complete a senior honors thesis as part of the senior-year course work.

Sample Programs — Psychology Majors

GENERAL	GRADUATE SCHOOL TRACK	HONORS
Freshman		
Psych. 9A, B, C	Psych. 9A, B, C	Psych. 9A, B, C
2 Intro. Soc. Sci.	Humanities Core	Humanities Core
1 Computer	Math. 2A-B, 7/Stats. 7	Math. 2A-B, 7/Stats. 7
6 Gen. Ed.		
Sophomore		
3 quarters Statistics[1]	3 quarters Statistics[1]	3 quarters Statistics[1]
3 Core[2]	3 Core[2]	3 Core[2]
6 Gen. Ed./Electives	2 Intro. Soc. Sci.	2 Intro. Soc. Sci.
	1 Computer	1 Computer
	3 Gen. Ed.	3 Gen. Ed.
		Apply to Honors in spring
Junior		
1 Core[2]	1 Core[2]	Psych. H111A-B*-C
3 Module/UDP[3]	3 Module/UDP[3]	Psych. H101A
4 Gen. Ed./Electives	4 Gen. Ed./Electives	1 Core[2]
and select one:	Psych. 112A-B*-C and 1 UDP[3]	2 UDP[3]
Psych. 112A-B*-C and 1 UDP[3]		5 Gen. Ed./Electives
Psych. 112M and 3 UDP[3]		
Senior		
9 Electives	9 Electives	8 Electives
and select one:	2 Psych. 199	Psych. H101B-C
2 Psych. 199 and Psych. 190	1 Psych. 190	2 Psych. 199
3 UDP[3]		

Sample Program — Transfer Psychology Majors

Junior	Senior
Psych. 9A, B, C	1 Core[2]
3 quarters Statistics[1]	3 Module/UDP[3]
1 Computer	1 Elective
2 Intro. Soc. Sci.	*and select one:*
3 Core[2]	Psych. 112A-B-C and 3 UDP[3]
	Psych. 112M and 5 UDP[3]

[1] Either Psychology 10A-B-C or Social Science 10A-B-C, with Psychology 10 recommended for those planning to attend graduate school in Psychology.

[2] Psychology core course, an upper-division course with the ending number "0."

[3] UDP in an upper-division Psychology course.

* Taken in satisfaction of the upper-division writing requirement.

Psychology Minor Requirements

Requirements for the minor in Psychology are met by taking seven or eight psychology courses (28 or 32 units) as specified below:

A. Psychology 7A (for the 28-unit minor) or 9A, B, C (for the 32-unit minor).

B. Three upper-division Psychology courses chosen from the following core courses in Psychology: 120A, 120D, 120H, 120P, 130A, 140C, 140L, 140M, 160A, 160D.

C. For students who take Psychology 7A, three additional psychology courses (four or more units each) no more than one of which is a lower-division course. For students who take Psychology 9A, B, C, two additional upper-division Psychology courses (four or more units each). Psychology 190–199 cannot be used to fulfill this requirement.

D. In addition, the School mathematics and computer science requirement (School requirement A) must be satisfied.

Graduate Program

Participating Faculty

William Batchelder: Mathematical models of learning and memory, mathematical psychology, and measurement

Bruce Berg: Audition, auditory attention, psychophysics of complex sounds, computational models of hearing

Myron Braunstein: Visual perception

Alyssa A. Brewer: Neuroimaging of visual perception, visual deficits, and neurological disorders

Charles F. Chubb: Visual perception, mathematical modeling, histogram contrast analysis

Barbara Dosher: Human information processing, memory retrieval, attention, visual perception

Michael D'Zmura: Vision, hearing, language, brain-computer interfaces

Jean-Claude Falmagne: Mathematical behavioral sciences

Emily D. Grossman: Visual perception, neuroimaging

Gregory Hickok: Neuroanatomy of language, neural plasticity, neuroimaging, cognitive neuroscience

Donald Hoffman: Machine and human vision, visual recognition, artificial intelligence, virtual reality, consciousness and cognition, shape from motion

Geoffrey J. Iverson: Mathematical psychology, psychophysics, statistics

Mary-Louise Kean: Cognitive neuropsychology, biological foundation of higher mental processes

Jeffrey Krichmar: Computational neuroscience, robotics

Michael D. Lee: Mathematical and computational models of stimulus representation, categorization, memory decision-making, problem solving

R. Duncan Luce: Axiomatic measurement, decision theory, psychophysics, response times

Virginia Mann: Reading ability: phoneme awareness, developmental dyslexia, phonological skills, early intervention, precocious readers; speech perception: context effects, cross-linguistic comparisons

Louis Narens: Measurement, logic, and metacognition

Lisa Pearl: Linguistics, computational linguistics, language development, language change, Bayesian models

Virginia M. Richards: Auditory perception and cognition, human psychophysics

Kourosh Saberi: Signal detection, psychophysics, cortical neuroscience, sensory genetics

Barbara Sarnecka: Cognitive development, language development, number concepts, conceptual change, individual cognitive development, historical development of science and mathematics

George Sperling: Vision, perception, information processing

Jon Sprouse: Linguistics, syntax, psycholinguistics

Ramesh Srinivasan: Cognitive neuroscience, brain development, consciousness, perception, EEG, brain dynamics

Mark Steyvers: Semantic influences in recognition and recall, computational models for knowledge extraction, dynamic decision-making models, causal reasoning, bayesian networks

W.C. Watt: Cognitive semiotics

Charles E. (Ted) Wright: Cognitive psychology, human motor control, Fitts task, aimed movements, handwriting, immersive virtual reality, 1/f noise, quantitative models

John I. Yellott, Jr.: Mathematical psychology, visual perception

GRADUATE STUDY IN THE COGNITIVE SCIENCES

The Department of Cognitive Sciences offers a Ph.D. degree program in Psychology, with a specialization in cognitive science, to prepare students for research and teaching careers in academia, industry, and government. The emphasis is on modern techniques of experimentation and theory construction. Special attention is given to providing hands-on research experience and equipping students with sophisticated mathematical and computing skills. The Department has 29 faculty; two are members of the National Academy of Sciences, and many serve as editors or editorial board members of leading professional journals, and as members of NSF and NIH study panels. Many Cognitive Sciences faculty are also members of UCI's Institute of Mathematical Behavioral Sciences, and the Department is generally regarded as one of the world's leading centers for mathematically oriented research in cognitive psychology. The Department is also allied closely to the School's Center for Cognitive Neuroscience.

ADMISSION

In addition to meeting the general requirements for admission, applicants should have acquired a background in mathematics equivalent to at least one year of calculus. Advanced course work in some of the following fields is highly desirable: psychology, computer science, mathematics, physical sciences, biology, logic, and linguistics. Standard requirements for admission include Graduate Record Examination (GRE) scores for tests taken within the past five years, official transcripts of all college course work, and at least three letters of recommendation. Applicants whose first language is not English must also take the Test of English as a Foreign Language (TOEFL) and achieve a score of 213 or higher on the computer-based exam or 550 or higher on the paper-based exam. As an alternative to the TOEFL, candidates for admission may submit scores from the Academic Modules of the International English Language Testing System (IELTS), in which case an overall minimum score of 7 is required, with a score of no less than 6 on any individual module. Applicants who are not citizens of countries where English is either the primary or dominant language as approved by the UCI Graduate Council and who apply for a teaching assistantship, must pass the Test of Spoken English (TSE), or the Speaking Proficiency English Assessment Kit (SPEAK) examination, with a score of 50 or more. The IELTS can serve as an alternative to the Test of Spoken English (TSE) when the applicant also scores 8 or higher on the "Speaking" module of the Test.

To receive full consideration for fellowship and assistantship awards, applications must be received by December 15. Late applications may be considered until July 1 on a space-available basis. Since the program starts in the fall quarter, students are not normally admitted in the winter or spring, though exceptions may be made. Application materials are available online at the Graduate Division Web site, http://www.grad.uci.edu/prospective.

REQUIREMENTS FOR THE DOCTORAL DEGREE IN PSYCHOLOGY

Each student is expected to take two course sequences in the first year. These include a quantitative research methods sequence that covers the areas of probability, statistics, and experimental design (Psychology 203A-B-C). The second is a computational research methods sequence that covers programming for experiments and data analysis (Psychology 205A and 205B or 205C). Students must also enroll in a quarter-long proseminar course during the fall quarter of their first year (Psychology 202A). Suitable substitutes may be made with written approval of the Department's Director of Graduate Studies. Completion of the quantitative research methods sequence may be extended over two years if warranted by the background or needs of the student. Additional advanced course work in other fields relevant to the student's interests will supplement the required courses. Students are expected to enroll in the Cognitive Sciences Research Seminar (Psychology 201A-B-C) during all quarters in residence prior to passage of the advancement-to-candidacy examination.

In addition, each student must take at least four core elective courses prior to advancement to candidacy. These courses are drawn from the Core Elective module (Psychology 210–219). Students must also take at least three more courses prior to advancement to candidacy that are normally selected from at least two of the following six modules: Human Cognition (Psychology 220–229); Methodologies and Models (Psychology 230–239); Language Sciences (Psychology 240–249); Human Performance (Psychology 250–259); Cognitive Neuroscience (Psychology 260–269); and Sensation and Perception (Psychology 270–289).

Each student is expected to carry out theoretical/empirical research during the first two years. By the end of the second year, each student should have completed a research project of a scope and nature that is potentially publishable in a professional journal. Every student is assigned a faculty advisor, and the advisor is responsible for assisting in the planning and other facets of the project. Students are required to present a talk to the Cognitive Sciences Research Seminar, based on their research project, by the end of the spring quarter of their second full year in the graduate program. (Another forum for the second-year talk may be substituted with the written approval of the Graduate Director.)

By the following fall quarter, students are required to write a paper based on their research project. The paper must be approved by the student's advisor and the Director of Graduate Studies.

At the end of each academic year the faculty of the Department meet to discuss and provide feedback on the progress of each student in the program.

Requirements for the M.A. Degree

NOTE: Although the Department does not have an M.A. program, students may earn an M.A. degree as part of the Ph.D. program.

The student must (1) complete the required course work as outlined above; (2) present a talk and submit an approved paper, both based on empirical/theoretical research, as described above; and (3) fulfill a computer-programming language requirement by completing satisfactorily the computational research methods sequence Psychology 205A-B or by demonstrating proficiency in use of a programming language for cognitive sciences research as assessed by two faculty members and approved by the Graduate Director.

Requirements for Advancement to Candidacy

The requirements for advancement to candidacy are (1) the student must meet the requirements listed above for the M.A. degree; (2) the student must, in addition, form a five-member faculty committee selected according to Graduate Division policy. The committee will examine the student on a topic which is determined in consultation with the committee. A written document describing the student's work on this topic must be submitted to the committee prior to advancement. The student must demonstrate an understanding of the background and issues for the research topic and show sufficient preparation and creativity to undertake planning for a dissertation project (e.g., by describing a possible experimental design or outlining a possible theoretical development); and (3) students are required to advance to candidacy by the end of the fall quarter of their third year in the program.

Requirements for the Ph.D. Degree

The requirements for the Ph.D. degree are (1) the student must formally present and defend a written dissertation proposal to a committee of at least three members selected according to Graduate Division requirements. The dissertation proposal presentation may take place as part of the examination for Advancement to Candidacy, in which case, that five-member committee will approve the dissertation proposal; (2) the proposal must be approved prior to the final dissertation defense (usually at least three months before to allow time for the candidate to incorporate suggestions and changes required by the committee); (3) prior to the approval of the final version of the dissertation the student is expected to defend the dissertation in a public colloquium announced with at least one week's notice; and (4) all requirements for the Ph.D. degree must be fulfilled within three years after advancement to candidacy.

The normative time for advancement to candidacy is three years. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is six years.

CONCENTRATION IN COGNITIVE NEUROSCIENCE

Students can also pursue a Ph.D. in Psychology with a concentration in Cognitive Neuroscience. This is an interdisciplinary field which studies the relation between mind and brain. With the development of non-invasive functional brain imaging techniques during the last two decades, the integration of cognitive and neural models of information processing has become a major focus in the field, and a major growth area within the Department's academic plan.

The program concentration is administered by the Department of Cognitive Sciences and coordinated by the graduate director in concert with the Cognitive Neuroscience program advisor. Commensurate with the multidisciplinary nature of cognitive neuroscience, the Department expects to admit students with a variety of undergraduate educational backgrounds. These include, but are not necessarily limited to, undergraduate degrees in psychology/cognitive science, neuroscience, biology, computer science, mathematics, and engineering. Students will have the opportunity to work closely with faculty from the Center for Cognitive Neuroscience (see http://www.ccns.uci.edu).

Requirements

Course work. Students must complete 12 courses distributed as follows: the cognitive neuroscience core course, Psychology 216; two quantitative courses drawn from Psychology 203A and either 203B or 203C; one computational course, drawn from the Psychology 205A-B-C sequence; two neuroscience methods courses drawn from Psychology 236, 265A-B, 268A; two cognitive sciences courses drawn from Psychology 210–219; two neuroscience courses drawn from the Psychology 261–269 module; and two electives.

Students must fulfill the Ph.D. program's computer-programming language requirement.

Students are expected to enroll in the Cognitive Sciences Research Seminar (Psychology 201A-B-C) and the Cognitive Neuroscience Research Seminar (Psychology 260) during all quarters in residence prior to passage of the advancement-to-candidacy examination.

Concentration examination. At the beginning of the fall quarter of their second year, students will be required to take a written concentration examination. It will involve (1) a critical review of work in the student's area of research interest, and (2) written responses to specific questions provided by the student's committee members.

Advancement examination. The advancement examination consists of a written research proposal in NIH NRSA Predoctoral Fellowship format, and an oral defense of the proposed research. The advancement committee will comprise the student's advisor plus four additional faculty members, one of whom will be from outside the program. Students are encouraged to advance by the end of their second year, and must advance by the end of the first quarter of their third year.

Dissertation. Students must submit a dissertation describing original publishable research and present a public defense of the dissertation as the final requirement of the Ph.D. program.

Courses in Psychology

***(Schedule of Classes* designation: Psych)**

LOWER-DIVISION

7A Introduction to Psychology (4) F, W, S, Summer. Introduction to field of psychology, addressing the application of scientific methods to the study of human development, learning, memory, problem solving, perception, biological mechanisms, emotions and motivation, personality, psychopathology, and effects of diverse social and cultural contexts on human behavior. Same as Psychology and Social Behavior 9. No credit for Psychology 7A/Psychology and Social Behavior 9 if taken concurrently with, or after, any of the following: Psychology 9A, B, or C. Psychology and Social Behavior 11A, B, or C. **(III)**

9A, B, C Psychology Fundamentals (4-4-4) F, W, S. Designed to provide freshman Psychology majors with an in-depth survey of general psychology. Topics include biological bases of behavior, sensation, perception, cognition, development, personality, psychopathology, and social psychology. Same as Psychology and Social Behavior 11A, B, C. No credit for Psychology 7A/Psychology and Social Behavior 9 if taken concurrently with, or after, any of the following: Psychology 9A, B, or C. Psychology and Social Behavior 11A, B, or C. **(III)**

10A-B-C Probability and Statistics in Psychology I, II, III (4-4-4). An introduction to probability and statistics. Emphasis on thorough understanding of the probabilistic basis of statistical inference. Examples drawn primarily from psychology. Students who receive credit for Psychology 10A-B-C may not receive credit for Anthropology 10A-B-C, Political Science 10A-B-C, Social Ecology 13, Social Sciences 9A-B-C or 10A-B-C, or Sociology 10A-B-C. **(V)**

21A Adolescent Psychology (4). Focuses on psychosocial dynamics of today's adolescents in America emphasizing the quest for identity, independence, values, and sexual orientation. The influence of society, family, school, and peers is analyzed. Strategies for helping troubled adolescents are discussed. Prerequisite: Psychology 7A or 9A, B, C, or Psychology and Social Behavior 9 or 11A, B, C. Psychology 21A and Psychology and Social Behavior 112D may not both be taken for credit. **(III)**

46A Introduction to Human Memory (4). Covers the core concepts of modern research and theorizing about human memory, including structural subdivisions (e.g., perceptual memory, short-term memory, long-term memory), different measures of memory (e.g., recall, reorganization), and some practical applications of memory research (e.g., mnemonics). Prerequisite: Psychology 7A or 9A, B, C or Psychology and Social Behavior 9 or 11A, B, C. Psychology 46A may not be taken for credit concurrently with or after Psychology 140M or Psychology and Social Behavior 192J. **(III)**

56L Acquisition of Language (4). What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year olds. Comparison of kinds of data on which these theories are based. Same as Linguistics 51. **(III)**

78A Introduction to Social Psychology (4). Studies sociological contributions to theory and research in social psychology, with focus on the social influences on personality, attitudes, beliefs, and behavior; socialization, human groups, and social interaction. Same as Sociology 31. **(III)**

89 Special Topics in Lower-Division Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

UPPER-DIVISION

H101A-B-C Honors Seminar in Psychology I, II, III (4-4-4). Focuses on the research activities and honors thesis research projects of each student and on the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups are required. Restricted to students in the Honors Program in Psychology. H101B: Pass/Not Pass only.

RESEARCH METHODS

H111A Honors Experimental Psychology (4) F. Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Corequisite: Psychology H111LA. Prerequisites: Psychology 9A, B, C, or Psychology and Social Behavior 11A, B, C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, or Mathematics 2A-B and 7/Statistics 7. Open only to students in the Honors Program in Psychology. Psychology H111A and 112A may not both be taken for credit.

H111LA Honors Experimental Psychology Laboratory (2) F. Corequisite: Psychology H111A.

H111B Honors Advanced Experimental Psychology (4) W. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology H111LB. Prerequisite: Psychology H111A or Psychology 112A. Open only to students in the Honors Program in Psychology or by consent of instructor.

H111LB Honors Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology H111B.

H111C Honors Research in Experimental Psychology (4) S. Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology H111B or 112B. Open only to students in the Honors Program in Psychology or by consent of instructor.

NOTE: Students who wish simply to fulfill the laboratory/research-methods requirement in one quarter should take Psychology 112M or 112P.

112A Experimental Psychology (4) F. Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Corequisite: Psychology 112LA. Prerequisites: Psychology 9A, B, C, or Psychology and Social Behavior 11A, B, C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, or Mathematics 2A-B and 7/Statistics 7. Only one course from Psychology H111A, 112A, and 112F-G may be taken for credit.

112LA Experimental Psychology Laboratory (2) F. Corequisite: Psychology 112A.

112B Advanced Experimental Psychology (4) W. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology 112LB. Prerequisite: Psychology 112A, 112LA. Only one course from Psychology 112B and 112F-G may be taken for credit.

112LB Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology 112B.

112C Research in Experimental Psychology (4) S. Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology 112B, 112LB. Only one course from Psychology 112C and 112F-G may be taken for credit.

112M Research Methods in Psychology (4) F. Research methods in psychology for majors who wish to fulfill this requirement separately from upper-division writing. Covers both experimental and descriptive research methods, analysis of results, and reading the psychological literature. Research experience is provided in laboratory sections. Corequisite: Psychology 112LM. Prerequisites: Psychology 9A, B, C, or Psychology and Social Behavior 11A, B, C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, or Mathematics 2A-B and 7/Statistics 7. Psychology 112M and 112F may not both be taken for credit. May not be taken for credit after completion of any other Psychology 112 course.

112LM Research Methods in Psychology Laboratory (2) F. Corequisite: Psychology 112M.

112P Research in Perception and Psychophysics (4). Introduction to design and practice of experiments: students perform auditory, visual, tactile, or other experiments. Emphasis on methodology, finding and reading previous research, generating research ideas, statistical analysis. Students propose and conduct their own final research project with approval. Corequisite: Psychology 112LP. Prerequisites: Psychology 9A, B, C, or Psychology and Social Behavior 11A, B, C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, or Mathematics 2A-B and 7/Statistics 7; Psychology 130A.

112LP Research in Perception and Psychophysics Laboratory (2). Corequisite: Psychology 112P.

112R Cognitive Robotics (4). Introduces concepts on experimental design, embodiment, robot construction, and computer programming. Concepts of embodied intelligence and case studies of cognitive robotics are covered in lecture. Simple robots are constructed and programmed to carry out different behavioral experiments in lab. Corequisite: Psychology 112LR. Prerequisites: Psychology 9A, B, C, or Psychology and Social Behavior 11A, B, C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, or Mathematics 2A-B and 7/Statistics 7.

112LR Cognitive Robotics Laboratory (2). Corequisite: Psychology 112R.

113T Introduction to Psychological Tests and Measurements (4). Principles of psychological measurement, including elementary psychophysics, psychometrics, test theory, and the measurement of abilities, attitudes, traits, and interests. Reliability and validity of psychological measurements. Prerequisites: Psychology 7A or 9A, B, C, or Psychology and Social Behavior 9 or 11A, B, C; Psychology 10A or any other 10A course in the School of Social Sciences, or equivalent.

114M MATLAB Programming (4). MATLAB is a mathematical software package for solving quantitative problems often encountered in experimental psychology. Topics include rudiments of programming, statistical analysis of data, matrix algebra, signal processing, graphic visualization, and simulated models of cognitive and perceptual processes.

119 Special Topics in Research Methodologies (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

GENERAL PSYCHOLOGY

120A Abnormal Psychology (4). Introduction to psychopathology and behavioral deviations, and the concepts of theories regarding these conditions. Prerequisite: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C. Psychology 120A and Psychology and Social Behavior 102C may not both be taken for credit.

120D Developmental Psychology (4). A general introduction to the study of the physical, intellectual, social, and emotional development of the child from birth to adulthood. Prerequisites: Psychology 7A or 9A, or Psychology and Social Behavior 9 or 11A. Psychology 120D and Psychology and Social Behavior 111D may not both be taken for credit.

120H History of Psychology (4). A history of the development of various schools and systems of psychological thought. Prerequisite: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent, or consent of instructor. Same as Psychology and Social Behavior 192A.

120P Personality Theories (4). A survey of the evolution of personality theory during this century. An overview of major perspectives in the field, with special attention to Freud, Jung, and Adler. Prerequisite: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C. Psychology 120P and Psychology and Social Behavior 170S may not both be taken for credit.

121M Theories of Motivation (4). Factors affecting the behavioral performance of organisms. A survey of theoretical and empirical approaches to the physiological, psychological, and social factors which generate behavior. Prerequisites: Psychology 7A or 9A, B, C, or Psychology and Social Behavior 9 or 11A, B, C. Psychology 121M and Psychology and Social Behavior 176S may not both be taken for credit.

121S Psychology of Sleep and Consciousness (4). Covers the physiology, neurochemistry, and neuroanatomy associated with sleep, contemporary sleep theory, REM and NREM, phenomenology, sleep disorders, examination of differences between conscious and unconscious cognitive function, the history of sleep and dream theories from ancient time to present day.

122C Clinical Psychology (4). Provides overview of the clinical psychology field including theories and techniques used in counseling and testing.

122I Organizational/Industrial Psychology (4). Introduction to applied psychology in organizations, including personnel testing, selection, training and evaluation, job and classification analysis, job satisfaction and motivation, organizational development, leadership, market research and consumer psychology. Potential ethical problems are discussed. Prerequisite: Psychology 7A, or 9A, or 9B, or 9C, or Psychology and Social Behavior 9 or 11A, or 11B, or 11C, or equivalent, or consent of instructor. Same as Psychology and Social Behavior 180S.

123P Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 143 and Philosophy 143.

127A Adult Development (4). Examines why and how we change (with attention to gains as well as losses) from ages 25–65 and the nature and sources of continuity over time. Topics include physical and intellectual functioning, personality, coping strategies, and social roles and relationships. Prerequisite: Psychology 7A or 9B, or Psychology and Social Behavior 9 or 11B, or equivalent. Same as Psychology and Social Behavior 113D.

127C Clinical Child Psychology (4). Examines research and theory concerning childhood psychopathology behavior disorders. Diagnosis and assessment, early identification of high-risk children, fears and phobias, antisocial behavior, childhood psychoses, autism, depression, attention deficit/hyperactivity disorders, and ethical and policy implications of identifying children who are different. Prerequisites: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent. Same as Psychology and Social Behavior 152C.

127D Development of Gender Differences (4). Examination of research on how sexes differ in physiology, cognitive functioning, personality, and social behavior. Sex-differentiated development from the prenatal period through adulthood. Explanations for male-female differences are sought, focusing on biological (genetic, hormonal), and social (familial, cultural) mechanisms. Prerequisite: Psychology 7A or 9B, or Psychology and Social Behavior 9 or 11B, or equivalent. Same as Psychology and Social Behavior 117D.

127E Psychology and Emotion (4). General theories of emotion and research regarding cognitive, behavioral, physiological, and subjective experience of emotion. Specific topics include emotion regulation, emotion and health, emotional intelligence, and emotional development. Prerequisite: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent. Same as Psychology and Social Behavior 177S.

127G Gerontology (4). Examines stereotypes and myths associated with aging; physiological and psychological changes that accompany old age; distinguishes behavior changes due to aging *per se* from those due to historical and socioeconomic factors; political, social aspects of old age in contemporary society. Prerequisite: Psychology 7A or 9B, or Psychology and Social Behavior 9 or 11B, or equivalent. Same as Psychology and Social Behavior 114D.

127H Child Health Psychology (4). Exploration of psychological antecedents, concomitants, and consequences of medical illnesses in children. Children's beliefs about health, illness, and medication; the role of stress; coronary-prone behavior; therapeutic adherence and physician-patient interaction; coping with chronic illness; effects of a child's illness on family. Prerequisites: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent; Social Ecology 10 recommended. Same as Psychology and Social Behavior 138H.

127I Infant Development (4). Study of human development from conception through the first two years of life, covering processes and events in the domains of physical, social, and cognitive development. Prerequisite: Psychology 7A or 9B, or Psychology and Social Behavior 9 or 11B, or equivalent. Same as Psychology and Social Behavior 110D.

127S Attitudes and Behavior (4). Intended for students interested in theory and research on how attitudes influence, and are influenced by, behavior. Topics include: voting behavior, Fishbein and Ajzen's theories of reasoned action and planned behavior, attitude accessibility, prejudice and discrimination, and cognitive dissonance theory. Prerequisite: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent. Same as Psychology and Social Behavior 172S.

127T Child Therapies (4). Examines research methodologies, empirical data, and implications of diverse intervention strategies. Primary topics include psychotherapy process and outcome, family therapies, behavioral intervention, cognitive behavior modification, pediatric psychopharmacology, and ethical and social policy implications of intervening in other people's lives. Prerequisites: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent; Psychology 122C or consent of instructor. Same as Psychology and Social Behavior 155C.

129 Special Topics in General Psychology (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

PERCEPTION AND SENSORY PROCESSES

130A Perception and Sensory Processes (4). A general introduction to the scientific study of sensory processes and perceptual phenomena, with special emphasis on the visual system. Prerequisite: Psychology 7A or 9A, or Psychology and Social Behavior 9 or 11A, or equivalent, or consent of instructor. Psychology 130A may not be taken for credit after 131A or 131B. Same as Psychology and Social Behavior 192E.

131A Vision (4). Visual perception and the anatomy and physiology of the visual system. Topics include: the retina and the visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and the development of the visual system. Psychology 130A may not be taken for credit after Psychology 131A. Same as Biological Sciences N182.

131B Hearing (4). Auditory perception, the anatomy and physiology of the auditory system, and the physics of sound. Topics include: neural transduction of sound, sensitivity, sound localization, complex sound perception, and hearing loss. Prerequisites: Psychology 9A, B, or Psychology and Social Behavior 11A, B; upper-division standing or consent of instructor. Psychology 130A may not be taken for credit after 131B.

135A, B, C Memory and Decision-Making Research (2-2-2). Covers a range of theoretical, empirical, and model-based memory and decision-making research topics, including reconstructive memory, decision-making in reinforcement learning problems, sequential sampling processes, hierarchical Bayesian methods, and the application of machine learning methods to corpora of human behavior. Concurrent with Psychology 235A, B, C.

135M The Mind/Body Problem (4). What is consciousness and what is matter and how are the two related? How can brains have minds? This multidisciplinary course draws on information from the fields of computer vision, artificial intelligence, cognition, neurophysiology, philosophy, and psychophysics.

139 Special Topics in Perception and Sensory Processes (4). Prerequisites vary. May be repeated for credit as topic varies.

LEARNING AND COGNITION

140C Cognitive Science (4). Introduction to investigations of the structure and function of the mind, from viewpoints of computation, neuroscience, philosophy, and cognitive psychology. Topics include: perception, attention, knowledge representations, learning and memory, action, reasoning, and language. Prerequisite: Psychology 7A or 9A, 9B or Psychology and Social Behavior 9 or 11A, 11B or equivalent. Same as Psychology and Social Behavior 192G.

140L Principles of Learning Theory (4). Investigation of the learning and memory processes of humans and animals. Basic experimental approaches to learning and memory, empirical results, and theoretical interpretations of the evidence are discussed. Prerequisite: Psychology 7A or 9A, or Psychology and Social Behavior 9 or 11A, or equivalent. Same as Psychology and Social Behavior 192I.

140M Human Memory (4). Developments in the area of memory; history of memory research; theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, relationship of memory to thinking. Selected theoretical formulations for memory. Prerequisite: Psychology 7A or 9B or Psychology and Social Behavior 9 or 11B, or equivalent. Psychology 46A may not be taken for credit concurrently with or after Psychology 140M or Psychology and Social Behavior 192J. Same as Psychology and Social Behavior 192J.

141A Education and Children (4). Students tutor children in an educational setting and reflect on their experiences by documenting events and analyzing them. Pass/Not Pass only. May be taken for credit three times.

141D Cognitive Development: The Origins of Knowledge (4). Explores the origins of individual human knowledge in relation to two larger time scales: biological evolution and historical/cultural change. Evidence from many fields is presented, but the main focus is on experimental data from cognitive and developmental psychology. Prerequisites: upper-division standing and satisfactory completion of the lower-division writing requirement. Psychology 141D and Psychology and Social Behavior 115D may not both be taken for credit.

141J-K-L Jumpstart: Early Language, Literacy, and Social Development (4-4-4) F, W, S. An experiential course integrated with lecture material in the field of child development and education. Students are expected to attend lectures, complete assignments, and commit a total of eight hours per week as mentors of disadvantaged preschool children. Prerequisite: consent of instructor. Same as Education 141A-B-C.

143P Human Problem Solving (4). Modern developments in the psychology of human problem solving. Topics include: concept identification, arithmetic, sets, logic puzzles, story problems, group problem solving, and theorem proving. Prerequisite: Psychology 7A or 9B, or Psychology and Social Behavior 9 or 11B, or equivalent. Same as Psychology and Social Behavior 192K.

144A-B-C HABLA: Language Intervention for Disadvantaged Children (4-4-4). Trains students (fall quarter) to deliver home visits (winter and spring) that promote school readiness among two–four year-olds from low SES and educational backgrounds. Covers fundamentals of child language, literacy, cognitive development; procedures, ethics of home visitation. Work with parents and children to create better home literacy and language environment. Prerequisites: must pass an interview by instructor, be fluent in English and one other language (Spanish most typically), must have experience with preschool children and be culturally sensitive. Same as Chicano/Latino Studies 191A-B-C and Social Science 186A-B-C.

145P-Q-R Attention and Learning Deficits in Children I, II, III (4-4-4). Learning in normal and attention-deficit disordered children. Covers the normal developmental course of learning and a variety of deficits. Includes field work with attention-deficit disordered children. Prerequisite: consent of instructor.

146M Writing About Memory (4). Covers a broad range of texts, literary, philosophical, and scientific, each probing the nature of memory and its meaning in human life. Readings are drawn from across many disciplines and many perspectives. Prerequisites: Psychology 7A or 9B or Psychology and Social Behavior 9 or 11B, or equivalent; satisfactory completion of the lower-division writing requirement.

147C Cognitive Behavior Therapy (4). Presentation of principles and procedures of therapeutic interventions based on cognitive-behavior methods. Cognitive factors in learning, emotional arousal, psychological disorder, and psychotherapy reviewed. Introduces the application of cognitive behavioral methods to problems of depression, anxiety, anger, pain, and impulsivity. Prerequisite: Psychology 7A or 9A, 9C, or Psychology and Social Behavior 9 or 11A, 11C, or equivalent. Same as Psychology and Social Behavior 154C.

148A, B, C Cognitive Development Research (4-4-4). Provides experience in cognitive development research, centered around the child's acquisition of number words and concepts. Students conduct research and review and discuss each other's projects in weekly lab meetings with instructor and graduate students. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

149 Special Topics in Cognition and Learning (4). Prerequisites vary. May be repeated for credit as topics vary.

LANGUAGE SCIENCES

153 Experimental Syntax (4). Examines the experimental methods that have been proposed for accessing speakers' knowledge of language in the psycholinguistic literature. Students investigate the merits of each technique through hands-on experience, culminating in a fully fledged experimental syntax study. Prerequisite: Linguistics 20. Same as Linguistics 123.

155 Psychology of Language (4). Examines language using the tools of experimental psychology. From sounds to words to spoken and written sentences, explores how language is used in real time, and how its use reveals how it is represented in the mind. Same as Linguistics 155.

156A Acquisition of Language II (4). Focuses on native language learning, exploring the way in which infants and very young children unconsciously uncover the rich systematic knowledge of their native language. Examines both experimental and computational studies that quantitatively investigate the "how" of language acquisition. Prerequisite: Psychology 56L or Linguistics 51 recommended. Same as Linguistics 150.

157M Computational Methods for Language Research (4). Focuses on computational methods useful for language research. Students become familiar with software and programming languages used for extracting information from electronic datasets and for creating basic simulations of linguistic cognition. No prior programming experience assumed. Prerequisite: Psychology 155/Linguistics 155 or Psychology 156A/Linguistics 150, or consent of instructor. Same as Linguistics 107M. Concurrent with Psychology 247M.

158A, B, C Language Sciences Research (4-4-4). Provides in-depth experience in all facets of behavioral research in the language sciences. Research topics include language acquisition, adult processing, and bilingualism. Methodologies include reaction time research and neuron-imaging. Students engage in research and participate in a weekly seminar. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

159 Special Topics in Semiotics and Language (1 to 4). Prerequisites vary. May be repeated for credit as topics vary.

COGNITIVE NEUROSCIENCE

160A Introduction to Cognitive Neuroscience (4). Introduction to the neural basis of human perceptual, motor, and cognitive abilities. Topics include sensory perception, motor control, memory, language, attention, emotion, frontal lobe function, functional brain imaging, and neuropsychological disorders. Prerequisite: Psychology 7A or 9A, B, or Psychology and Social Behavior 9 or 11A, B, or Biological Sciences 35, or equivalent, or consent of instructor. Same as Biological Sciences N166 and Psychology and Social Behavior 192L.

160D Brain Disorders and Behavior (4). Examines the localization of human brain functions and the effects of neurological disorders on psychological functions such as perception, motor control, language, memory, and decision-making. Prerequisites: Psychology 7A or 9A, B, or Psychology and Social Behavior 9 or 11A, B, or Biological Sciences 35, or equivalent, or consent of instructor. Same as Biological Sciences N165. Formerly Psychology 165.

161 Language and the Brain (4). Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 35 or N110, or consent of instructor. Same as Linguistics 158 and Biological Sciences N160.

161H Hearing and the Brain (4). An overview of brain mechanisms of hearing, including perception of simple sounds, speech, and music. Begins with sound itself, and looks at processing by the ear, auditory pathways, auditory cortex, and beyond. Also auditory development, learning, and clinical issues. Prerequisite: Psychology 160A or Biological Sciences N110. Same as Biological Sciences N147.

161P Perceptual Neuroscience (4). Examines the physiology of cortical networks underlying human perceptual experience. Prerequisite: Psychology 160A or Psychology and Social Behavior 192L or consent of instructor. Same as Psychology and Social Behavior 192P.

161V Cognitive Neuroscience of Vision (4). Explores the neural basis of our visual experience, including visual perception, face and object recognition, attention, and visual awareness. Emphasis placed on evidence acquired from neuroimaging, neuronal recordings, patient literature, and brain stimulation. Prerequisite: Psychology 160A or Psychology and Social Behavior 192L.

162A Neurobiology of Learning and Memory (4). How the brain and behavior change as a result of experience, with an emphasis on identifying the neurochemical processes through which memory is stored and the parts of the brain that are involved. Prerequisite: Biological Sciences 35 or N110. Same as Biological Sciences N158.

162B Human Memory Disorders (4). Focuses on models and methods of assessing human memory and its disorders. Exposure to conventional and new assessment devices provided.

164A, B, C Neuroscience of Language Research (4, 4, 4). Covers a range of neuroscience of language research topics: psycholinguistic and neuroscience foundations, methods, experimental design, and content areas such as speech perception/recognition, production, sensory-motor integration, lexical access, comprehension, working memory, sign language, and aphasia. Concurrent with Psychology 264A, B, C.

168E Embodied Cognition (4). Addresses concepts of embodiment in cognitive sciences. Introduces the notion of how the brain is closely coupled to the body and its interaction with the environment. Case studies of both natural and artificial systems are explored. Prerequisite: Psychology 9A, B, C or Psychology and Social Behavior 11A, B, C.

169 Special Topics in Cognitive Neuroscience (4). Prerequisites vary. May be repeated for credit as topics vary.

INTERDISCIPLINARY STUDIES

171 Psychology of a Diverse Society (4). Examines the social and cultural bases of human behavior, including ethnicity, gender, gender orientation, class, and religion. Analysis of historical, political, and economic factors influencing a diverse society.

173A Psychological Anthropology (4). Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics; biocultural aspects of child development and attachment; evolutionary models of culture and behavior; politically linked personality; cognitive anthropology; psychology of narrative forms; comparative national character studies. Prerequisite: Psychology 7A or 9A, B, C, or Psychology and Social Behavior 9 or 11A, B, C, or Anthropology 2A. Same as Anthropology 132A.

174A Asian American Psychology (4). Examines the social and psychological concerns of Asian Americans, e.g., coping with racial prejudice, maintaining bicultural identities, dealing with cross-cultural conflicts in interracial relationships, and trying to reconcile generational differences between immigrant parents and their American-born children. Same as Asian American Studies 141. **(VII)**

174C Adolescent Psychology in Urban American Society (4). Psychosocial dynamics of adolescents in American society; their ongoing quest for identity, independence, values, moral and cognitive development, peer group relationships, sexuality and sex role preference. Analysis of power struggle between adolescent subcultures and institutions of dominant society.

174E African American Psychology (4). Historical overview of the development of black psychology and the African American frame of reference. Topics include personality development, psychological assessment, issues in education, black mental health, and the role of the African American psychologist in the community. Same as African American Studies 153. **(VII)**

174F Chicano/Latino Psychology (4). Examines research and literature investigating Chicano/Latino ethnicity as a variable influencing behavior. Explores mental health needs and issues of Chicano/Latinos and discusses competent, sensitive methods of mental health service delivery. Same as Chicano/Latino Studies 171. **(VII)**

176A Political Psychology (4). Examination of how psychological theory and research may be used to better understand political thought and behavior. Drawing on theories of learning, cognition, and personality, discusses the formation of political attitudes, the process of political decision-making, the nature of political leadership. Same as Political Science 137C.

177D Deviance (4). Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Same as Sociology 156 and Criminology, Law and Society C107. Previously Psychology 178D.

177F Forensic Psychology (4). Overviews all forensic psychology, then focuses on psychological analyses of criminal behavior, particularly violent behavior. Examines violence, sexual offending, and mental disorder related to crime with regard to clinical assessment, treatment, and rehabilitation; mental health services within forensic institutions. Prerequisites: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent; Psychology and Social Behavior 102C; Psychology and Social Behavior 178C or Criminology, Law and Society C149, or consent of instructor. Same as Criminology, Law and Society C136 and Psychology and Social Behavior 156C.

177I Impacts of Divorce (4). Examines divorce in historical, economic, and, primarily, psychological contexts, emphasizing recent research pertaining to the impacts of divorce on children, families, and society. Prerequisite: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent. Same as Psychology and Social Behavior 124D.

177P Developmental Psychopathology (4). Research and theory of origins, course, and outcomes of disordered behavior. Continuity and change in patterns of behavior; environmental challenges and buffers; stress and competence in children; vulnerable and invincible children; children of mentally ill parents; families at risk; childhood antecedents of adult disorders. Prerequisites: Psychology 7A or 9C, or Psychology and Social Behavior 9 or 11C, or equivalent; Psychology 120A or consent of instructor; Social Ecology 10 recommended. Same as Psychology and Social Behavior 153C.

178N Social Psychology of Networks (4). Review of network methods used in small group and organizational research. Discussion of social psychological literature relevant to the network study of cognitive social structure, exchange and communication, identity negotiation, and social control. Case study of network datasets exemplifies research issues. Same as Sociology 135.

179 Special Topics in Interdisciplinary Studies (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

190 Senior Thesis (4-4-4). In progress grading. Prerequisite: consent of instructor.

197A-Z Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198A-Z Directed Group Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. Students may enroll in only one 199 per quarter. May be repeated for credit as topic varies.

GRADUATE

201A-B-C Cognitive Sciences Research Seminar (1.3-1.3-1.4) F, W, S. Weekly reports and colloquia by faculty, students, and visitors. Prerequisite: admission to graduate program in Cognitive Sciences or consent of instructor.

202A Proseminar in the Cognitive Sciences (1). Introduction to the conceptual foundations and basic research results in the cognitive sciences for first-year graduate students. Satisfactory/Unsatisfactory only.

203A Discrete Mathematics and Probability (4). Logic and set theory are covered during the first three weeks, using an interactive computer system. The remaining seven weeks are devoted to probability theory and cover elementary concepts from samples spaces to Chebychev's Inequality and the moment generating function. Prerequisite: graduate standing.

203B Introduction to Mathematical Statistics (4). An introduction to statistical estimation and statistical inference. Topics include sufficiency and the Rao-Blackwell Theorem, completeness and the Lehmann-Scheffe Theorem. The method of maximum likelihood is explored in some detail. Inference in linear models covers regression and analysis of variance.

203C Design and Analysis of Experiments (4). Discussion of the logic of experimental design and inferential statistics. Presentation of mathematical ideas from behind analyses of variance and covariance, analysis of counted data; main emphasis on research applications rather than mathematical formulations. Prerequisite: graduate standing or consent of instructor.

204A Professional and Laboratory Skills (2.7). Using a variety of formats, this course allows students to develop and practice their professional skills and introduces students to equipment and technical procedures used for a variety of research. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing in Psychology or consent of instructor. May be repeated for credit.

205A Computational and Research Methods with MATLAB (4). Introduces rudiments of programming, statistical analysis and probability theory, graphic visualization, GUI design, spectral analysis, and simulation models using MATLAB, a software package for solving quantitative problems often encountered in experimental psychology.

205B Running Experiments Using MATLAB (4). Provides an in-depth introduction to writing MATLAB programs to run auditory and visual experiments. Topics covered include program structure, stimulus generation, presentation, and data collection. Prerequisite: Psychology 205A or consent of instructor.

205C Computational Statistics (4). Introduction to a number of computational statistics approaches including exploratory data analysis and modeling using a probabilistic framework with Bayesian graphical models. Emphasis will be on in-class programming using MATLAB. Prerequisite: graduate standing or consent of instructor.

211 Attention and Perception (4). Focuses on selective attention, the process of selecting a subset of available information for analysis and representation, and on how stimulus salience, behavioral goals, and expectations influence attentional deployments and perception. Also explores related cognitive processes and applications. Prerequisite: graduate standing or consent of instructor.

212 Learning, Memory, and Knowledge Organization (4). Addresses fundamental issues in human memory, inductive learning, and knowledge organization. Knowledge representation, storage, retrieval, acquisition, and relation to the environment are explored. Prominent computational approaches are reviewed. Prerequisite: graduate standing or consent of instructor.

213 The Mind/Body Problem (4). Course is multidisciplinary, drawing on information from the fields of quantum physics, computer vision, artificial intelligence, cognition, neurophysiology, philosophy, and psychophysics. Prerequisite: graduate standing or consent of instructor.

214 Bayesian Cognitive Modeling (4). Considers a range of statistical methods of data analysis and simple cognitive models using the Bayesian graphical modeling framework. Prerequisite: graduate standing or consent of instructor.

215 Language Sciences (4). Introduces the field of theoretical linguistics, studies of adult processing of verbal materials in real time, language acquisition by children, and research on the structure and function of the neural substrate of human linguistic capacity. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

215L Language Acquisition (4). Focuses on native language learning, exploring the way in which infants and very young children unconsciously uncover the rich systematic knowledge of their native language. Examines both experimental and computational studies that quantitatively investigate the "how" of language acquisition. Prerequisite: graduate standing or consent of instructor. Formerly Psychology 245.

215N Neuroscience of Language (4). Covers fundamental issues in the neuroscience of language processing. Topics include word and sentence-level psycholinguistics, and the neural basis of these language functions as revealed by neuropsychological and functional imaging studies.

215S Structure of Language (4). Explores the structure of human languages, and the theoretical architectures that have been proposed to capture that structure. Special focus on the nature of linguistic facts, the structure of linguistic argumentation, and the psychological claims of linguistic theories. Prerequisite: graduate standing or consent of instructor. Formerly Psychology 241A.

216 Introduction to Cognitive Neuroscience (4). Explores the neural basis of higher cognitive functions such as perception, attention, language, memory, and executive function as understood from functional brain imaging, neuropsychological disorders, and other neuroscience techniques. Prerequisite: graduate standing or consent of instructor.

217 Vision (4). Examines visual sensation and perception using psychophysical and neuroscientific perspectives. Covers visual stimulus description and generation; the eye and retinal processing; LGN and cortical visual area function; specialized processing for form, depth, motion, and color perception; and neurological disorders. Prerequisite: graduate standing or consent of instructor.

218 Hearing (4). Examines auditory sensation and perception using psychophysical and neuroscientific perspectives. Covers physical aspects of sound; subcortical auditory processing; aspects of sensation and perception such as sensitivity, sound localization, and complex-sound recognition; neuroscientific studies of cortical function; and abnormal auditory processing. Prerequisite: graduate standing or consent of instructor.

219 Cognitive Development I: Core Knowledge (4). Explores the study of cognitive development in infancy and childhood. Emphasizes the role of this research in answering questions concerning the origins of human knowledge. Addresses topics of space, objects, agency, navigation, number, and conceptual change. Prerequisite: graduate standing or consent of instructor.

220 Cognitive Development II: Conceptual Change (4). The cognition of human infants is similar to that of other primates. But adult human knowledge is vastly different from that of any other animal. Examines the childhood conceptual changes that underlie adult human cognitive achievements. Prerequisite: graduate standing or consent of instructor.

229 Special Topics in Human Cognition (1.3 to 4). Current research in brain/ behavior relationships, human memory, and learning theory is presented. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

231P Topics of Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary. Same as Logic and Philosophy of Science 243 and Philosophy 243.

233A Observer Theory I (4). Provides framework for mathematical analysis of perception/cognition and its relation to the physical world. Permits a unified treatment of perceptual and physical interactions and lays the foundation for a nondualistic, nonreductionistic science. Mathematical aspects include a study of Markovian dynamic systems. Prerequisite: graduate standing or consent of instructor.

234A Mathematical Models of Cognitive Processes I (4). Mathematical models of various cognitive processes developed since 1960, including learning, memory, perception, psycholinguistics, and problem solving. Models are formulated in different mathematical languages: calculus, algebra, logic, probability, and computer. Difficulties in testing and validating models discussed. Prerequisite: graduate standing or consent of instructor.

235A, B, C Memory and Decision-Making Research (4-4-4). Covers a range of theoretical, empirical, and model-based memory and decision-making research topics, including reconstructive memory, decision-making in reinforcement learning problems, sequential sampling processes, hierarchical Bayesian methods, and the application of machine learning methods to corpora of human behavior. Concurrent with Psychology 135A, B, C.

236 Multivariate Time Series Analysis (4). Introduces multivariate time series analysis theory and methods emphasizing computational methods in spectral analysis, autoregressive modeling, information theory, principal and independent components analysis, and nonlinear dynamics. Applications to human neuroimaging data are extensively discussed. Prerequisite: Psychology 205A or consent of instructor.

236F Advanced Statistical Methods in fMRI Analysis (4). Introduces advanced statistical methods used in inferencing and exploratory fMRI analysis. Topics include hierarchical general linear modeling, parameter estimation variance components, design optimization, parametic designs, factor methods such as principle components, independent components, and path analysis. Prerequisite: Psychology 205A or 265C.

237 Advanced Bayesian Cognitive Modeling (4). Considers a range of advanced cognitive process models including models of signal detection, memory retention, category learning, stimulus representation, and reasoning using the Bayesian graphical modeling framework. Prerequisite: Psychology 214.

238 Auditory Signal Processing and Experimental Design (4). Topics include physics and measurement of sounds, digital signal processing (DSP), recording/processing of speech and music, generating complex sounds (e.g., FM and AM), use of sound level meter and artificial ear (coupler), digital filtering, signal mixing, autocorrelation and cross-correlation. Prerequisite: Psychology 205A or consent of instructor.

239 Special Topics in Methodology and Models (1.3 to 4). Current research in cognitive sciences methodologies, concepts, and models is presented. May be repeated for credit as topics vary.

245A Computational Models of Language Learning (4). Focuses on computational models of native language learning, exploring how probabilistic learning and inference fare on difficult case studies within language acquisition. In all cases, grounds the learning models in available empirical data and considers their psychological plausibility. Prerequisite: Psychology 215L or consent of instructor.

247M Computational Methods for Language Research (4). Focuses on computational methods useful for language research. Students become familiar with software and programming languages used for extracting information from electronic datasets and for creating basic simulations of linguistic cognition. No prior programming experience assumed. Prerequisite: one course from Psychology 215L, 215S, 215N, 245A, or consent of instructor. Concurrent with Psychology 157M and Linguistics 107M.

249 Special Topics in Language Science (1.3 to 4). Foundations and current research in theoretical, experimental, and computational linguistics. May be repeated for credit as topics vary.

254 Human Information Processing (4). Detailed introduction to speed-accuracy tradeoff experimental procedures; speed-accuracy tradeoff issues; quantitative modeling of temporal aspects of human information processing. Prerequisite: graduate standing or Honors Program in Psychology undergraduate with consent of instructor.

259 Special Topics in Human Performance (1.3 to 4). Current research in the human issues involved with sensation, perception, and cognition. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

260 Seminar in Cognitive Neuroscience (1). Explores current topics and trends in cognitive neuroscience including experimental, theoretical/computational, and methodological developments. May be repeated for credit as topics vary.

261N Cortical Neuroscience (4). Physiology of the cerebral cortex, theoretical neuroscience, and the neural basis of perception. Prerequisite: Psychology 216 or consent of instructor.

262 Functional Neuroanatomy (4). It is impossible to truly understand human behavior without some understanding of the physical structure that enables behavior. Examines recent findings in functional neuroantomy through lectures and papers discussing links between particular behaviors and specific brain structures. Prerequisite: graduate standing or consent of instructor.

263A, B, C Visual Neuroscience Research (4, 4, 4). Covers a range of cognitive neuroscience research topics with emphasis on cortical organization of visual circuits, object recognition, motion perception, visual attention, and decision making. Prerequisite: graduate standing or consent of instructor.

264A, B, C Neuroscience of Language Research (4, 4, 4). Covers a range of neuroscience of language research topics: psycholinguistic and neuroscience foundations, methods, experimental design, and content areas such as speech perception/recognition, production, sensory-motor integration, lexical access, comprehension, working memory, sign language, and aphasia. Concurrent with Psychology 164A, B, C.

265A-B Introduction to Functional MRI (4-4). Describes the fundamentals of imaging the human brain function using Magnetic Resonance Imaging (MRI). **265A:** Basic MRI physics and image acquisition for fMRI; experimental design for fMRI. **265B:** Fundamentals of fMRI data processing and analysis; fMRI data acquisition and analysis lab.

267 Cognitive Neuroscience of Music (4). Introduction to cortical mechanisms involved in music perception and production. Prerequisite: graduate standing or consent of instructor.

268A Computational Neuroscience (4). Introduction to computational neuroscience. Mathematical models of single neurons, neural circuits, thalamocortical systems, and cortical mass action can stimulate single-unit, local field potential, and EEG dynamics. These models are used to investigate mechanisms of sensation, motor control, attention, and consciousness. Prerequisites: Psychology 205A and 216 or 261N or consent of instructor.

268R Cognitive Robotics (4). Introduces concepts for studying cognitive function by embedding brain models on robotic platforms. Topics include robot construction, computer programming, and the notion of embodiment. Students construct simple robots and program these robots to perform different behaviors.

269 Special Topics in Cognitive Neuroscience (1.3 to 4). Current research in cognitive neuroscience. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

271A, B, C Perception Seminar (1.3, 1.3, 1.4). Participants, who include faculty interested in auditory and visual perception/psychophysics, along with interested graduate students, make research presentations and discuss current publications. The seminar also serves as a forum for presentations by visiting researchers. Satisfactory/Unsatisfactory only.

289 Special Topics in Sensation and Perception (1.3 to 4). Current research in the reception and processing of visual and auditory stimuli presented. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

290 Dissertation Research (1 to 12). Prerequisites: consent of instructor, graduate standing. May be repeated for credit.

299 Individual Study (4 to 12). Prerequisites: consent of instructor, graduate standing. May be repeated for credit.

DEPARTMENT OF ECONOMICS

3223 Social Science Plaza B; (949) 824-5788

Economics is concerned with the way individuals or societies allocate scarce resources and distribute goods and services. Any situation requiring choice among competing alternatives can be viewed as an economic problem. Economic courses enable students to study the way individuals make these choices (microeconomics), the way governments make these choices (public choice), and the aggregate consequences of these choices (macroeconomics). In addition, the Economics curriculum addresses international trade, money and banking, and economic development of the less developed nations.

Faculty members in the Department of Economics have research and teaching interests that span a broad range of fields. In addition to strengths in micro theory, macroeconomics, and econometrics (Bayesian and classical), the Department has expertise in many applied fields, including economic history, industrial organization, international economics, labor economics, public choice and public finance, transportation economics, and urban economics. Members of the Department maintain close ties with members of the Department of Political Science, the Department of Statistics, and The Paul Merage School of Business. Members of the Department maintain affiliations with the Institute for Mathematical Behavioral Sciences, the Institute of Transportation Studies, the Institute on Global Conflict and Cooperation, the Center for the Study of Democracy, and the program in International Studies.

Undergraduate Program

The Department offers majors in Economics, Business Economics, and Quantitative Economics, and an optional specialization in International Issues and Economics is available to students in all three majors. In addition, the Honors Program in Economics is open to high-achieving students in all three majors. The Department also offers a minor in Economics.

NOTE: Students may complete only one of the three Economics majors.

ADMISSION TO THE MAJORS

Freshmen: Preference will be given to those who rank among the highest using the selection criteria as stated in the Undergraduate Admissions section of this *Catalogue*.

Transfer-Student Applicants: Transfer applicants with the highest grades overall who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete one course in microeconomics, one course in macroeconomics, and one year of first-year calculus.

Change of Major: Information about change-of-major requirements, procedures, and policies is available in the School of Social Sciences Undergraduate Counseling Office and at http://www.changeofmajor.uci.edu.

REQUIREMENTS FOR THE B.A. DEGREE

University Requirements: See pages 55–62.

School Requirements: See page 460.

Departmental Requirements for the Major in Economics

This major is designed for students seeking a broad education applicable to occupations in business, law, and government or as preparation for graduate school in the social sciences. School requirements must be met and must include 17 courses as specified below.

A. Economics 20A-B.

B. Economics 15A-B.

C. Mathematics 2A-B and 4.

D. Economics 100A-B-C.

E. Economics 122A.

F. Six additional Economics courses, one of which may be lower-division.

Sample Program — Economics Majors

Freshman	Sophomore
Economics 20A-B	Economics 100A-B-C
2 Lower-division writing courses	Economics 15A-B
Math. 2A-B, 4	Soc. Sci. computer requirement
Lower-division Econ. electives	5 General Education
2 Soc. Sci. intro. courses	
2 General Education	

Junior	Senior
Economics 122A	3 Upper-division Econ. courses
4 Upper-division Econ. courses	Electives
2 General Education	
Electives	

Departmental Requirements for the Major in Quantitative Economics

The Department strongly urges students to consider the major in Quantitative Economics, which best prepares them for careers in business and finance, for law school, for M.B.A. programs, and for

graduate studies in the social sciences. School requirements must be met and must include 19 courses as specified below.

A. Economics 20A-B.

B. Mathematics 2A-B, 3A or 6G, and 4.

C. Economics 105A-B-C.

D. Statistics 120A-B-C.

E. Economics 123A-B.

F. Five additional Economics courses, including at least four four-unit upper-division courses and one that satisfies the upper-division writing requirement. The upper-division electives must include two Quantitative Electives selected from Economics 107, 116, 131A, and 135. Additional courses may be added to this list; up-to-date information is available at http://www.economics.uci.edu/.

NOTE: Students who are double majoring in Quantitative Economics and Mathematics may (i) substitute Mathematics 2D-E-J for Mathematics 4, (ii) substitute an upper-division probability and statistics sequence taught in the Mathematics Department for Statistics 120A-B-C, and (iii) substitute three upper-division Mathematics electives for upper-division Economics electives.

Sample Program — Quantitative Economics Majors

Freshman	Sophomore
Economics 20A-B	Economics 105A-B-C
2 Lower-division writing courses	Statistics 120A-B-C
Math. 2A-B, 3A or 6G, 4	Soc. Sci. computer requirement
2 Soc. Sci. intro. courses	4 General Education
2 General Education	
Junior	**Senior**
Economics 123A-B	3 Upper-division Econ. courses
4 Upper-division Econ. courses	Electives
2 General Education	
Electives	

Departmental Requirements for the Major in Business Economics

The Business Economics major is for students seeking a business orientation in their study of economics. It does not replicate the traditional undergraduate business school curriculum. Instead, it offers a more tightly focused curriculum that is guided by the rigorous logic and integrative perspective of economics. School requirements must be met and must include 20 courses as specified below.

A. Economics 20A-B.

B. Economics 15A-B.

C. Economics 25.

D. Mathematics 2A-B and 4.

E. Economics 100A-B-C.

F. Economics 122A-B.

G. Seven additional Economics courses, including at least four four-unit upper-division courses. Two of the electives must be selected from the following Business Electives list: Economics 125, 131A, 132A, 134A, 135, 142A-B, 145L, and 161A-B-C; and two of the electives must be selected from the following Management Electives list: Economics 140, 147A-B, 149 (when the topic is Business Decisions), 115, 151A-B, and 169 (when the topic is Economics of International Business). It is strongly recommended that students satisfy the upper-division writing requirement with one of the Economics electives.

Sample Program — Business Economics Majors

Freshman	Sophomore
Economics 20A-B	Economics 100A-B-C
2 Lower-division writing courses	Economics 15A-B
Math. 2A-B, 4	Soc. Sci. computer requirement
Economics 25	5 General Education
2 Soc. Sci. intro. courses	
2 General Education	
Junior	**Senior**
Economics 122A-B	3 Upper-division Econ. courses
4 Upper-division Econ. courses	Electives
2 General Education	
Electives	

Specialization in International Issues and Economics

Students in any of the three Economics majors may complete the specialization in International Issues and Economics. Admission to the specialization requires approval in advance by the Economics Department. The admissions process begins with completing a form at the Department office. This approval should be applied for after the student has completed Economics 20A-B, but no later than the end of the junior year.

The specialization requires the completion of the following:

A. International Studies 11 and 12 and Economics 13.

B. Three upper-division international Economics elective courses selected from Economics 156, 157, 161B-C, 163, 164A, and 169.

C. Three additional international general education elective courses selected from International Studies 111A, 112A, 120, 121, 122, 123, 179; Political Science 141A, 141B, 141C, 141D, 143D, 143E; Environmental Analysis and Design E100 (when the topic is International Environmental Issues); History 21A, 21B, 21C, 101. At most, only one lower-division elective may be taken.

Honors Program in Economics

Undergraduates in any of the three Economics majors may complete the Honors Program in Economics. Entry into the program requires a 3.4 GPA or better in upper-division Economics courses and an overall GPA of 3.2 or better. Undergraduates hoping to enter the program must apply no later than the spring quarter of their junior year. Students in the Honors Program must complete an honors thesis and the two-quarter Economics Honors Colloquium (Economics H190A-B; satisfies the upper-division writing requirement).

Economics Minor Requirements

Requirements for the minor in Economics are met by taking nine courses (36 units) as specified below:

A. Core courses (28 units): Economics 15A-B[1], 20A-B[2], and either 100A-B-C or 105A-B-C.

B. Electives (8 units): two upper-division Economics electives (excluding 199)[3].

NOTE: Prerequisites for the Economics core courses include Mathematics 2A-B, 4 (or 2D and 2J).

[1] Management 7 may not be used to substitute for Economics 15A-B. Furthermore, students will not received credit for Management 7 if taken after Economics 15A-B.

[2] Note that Economics 20A-B is a requirement of both the undergraduate major in Business Administration and the Economics minor.

[3] As noted in the Economics courses list that appears later in this *Catalogue*, some courses overlap with upper-division courses offered by The Paul Merage School of Business. Where there is overlap, students may use the course to count toward satisfying the upper-division requirements of the Business Administration major or the Economics minor, but not both.

Graduate Program

Participating Faculty

Duran Bell: Models of social processes
Volodymyr Bilotkach: Industrial organization, transportation economics, and microeconomics
Marianne Bitler: Labor economics, econometrics, and microeconomics
Dan Bogart: Economic history, institutions, infrastructure and economic development
William A. Branch: Macroeconomics
David Brownstone: Econometrics and transportation economics
Jan K. Brueckner: Urban economics, public economics, industrial organization, and housing finance
Jiawei Chen: Industrial organization, econometrics, finance
Linda R. Cohen: Political economy, social choice, government regulation, and government policy toward research and development
Art DeVany: Economic theory, industrial organization
Gordon J. Fielding: Urban and transportation economics
Michelle R. Garfinkel: Macroeconomics, political economy and conflict
Amihai Glazer: Political economy
Ivan Jeliazkov: Theoretical and applied econometrics, Bayesian inference, Markov chain Monte Carlo, computation in social sciences
Igor Kopylov: Microeconomics, decision theory, game theory
R. Duncan Luce: Theory of measurement, individual decision theory, response times
Julius Margolis: Political economy of national defense and government behavior
Francesca Mazzolari: Labor economics and public economics
Michael McBride: Microeconomics, game theory, political economy
Martin C. McGuire: Public finance, international trade, economics of peace and security
Fabio Milani: Macroeconomics, monetary economic, time-series econometrics, international money and finance
David Neumark: Labor economics
Min Ouyang: Macroeconomics, industrial organization, computational economics
Dale Poirier: Econometrics, both theoretical and empirical, specializing in Bayesian econometrics
Giuseppe Ragusa: Econometrics
Priya Ranjan: International trade
Gary Richardson: Economic history, immigration, institutions, and economic development
Guillaume Rocheteau: Monetary theory, macroconomics, labor economics, search theory
Jose Antonio Rodriguez-Lopez: International macroeconomics
Donald G. Saari: Social choice, voting theory, economic theory and mathematical economics
Manisha Shah: Development economics, health
Stergios Skaperdas: Economic theory, political economy
Kenneth A. Small: Urban economics, transportation economics, discrete-choice econometrics, environmental economics
Christian Werner: Mathematical geography

Affiliated Faculty

Dennis J. Aigner: Statistical and econometric methodology, efficiency estimation
Frank Bean: Immigration, population, public policy
Marlon G. Boarnet: Urban planning, urban economic development
Michael L. Burton: Economic anthropology, cognitive anthropology; kinship, gender, and households
Frank Cancian: Economic anthropology, comparative social inequality
Christopher Carpenter: Health economics, labor economics, and policy evaluation
Greg Duncan: Economics of education, program evaluation, child development
Paul J. Feldstein: Economics of health care
Bernard Grofman: Mathematical models of decision making, electoral rules and reappointment
Phillipe Jorion: Empirical research in investment, global portfolio investments, predicting the risk and return of foreign currencies, managing financial risk, and derivatives markets
Marek Kaminski: Voting models, democratization, political consequences of electoral laws
Richard McKenzie: Public choice
Andrew Policano: Macroeconomics, monetary theory and policy
Jean-Daniel Saphores: Environmental and natural resource economics and policy
Brian Skyrms: Game theory and decision making
Carole J. Uhlaner: Comparative political participation, formal models of political behavior

The Department of Economics offers a Ph.D. degree program in Economics. Drawing upon the School's strong quantitative tradition, it specializes in public choice, transportation economics, urban economics, econometrics, and applied microeconomics. Admission is highly selective and is limited to students whose interests mesh closely with those of the faculty. By requiring a high degree of overlap between faculty and student research interests, the program offers extensive faculty contact within a tutorial framework. Motivated and well-qualified students find the graduate program highly attractive because of its small size and its great flexibility. Self-discipline and an inquiring mind are prerequisites.

ADMISSION

The deadline for application for admission is January 15 for fall quarter. Students are admitted for winter or spring quarters only under exceptional circumstances. Late applications are considered on a space-available basis. All applicants must take the Graduate Record Exam (GRE) prior to the application deadline. Applicants whose primary language is not English must also submit Test of English as a Foreign Language (TOEFL) scores. To be considered for any financial aid (including a teaching assistantship), students who are not citizens of countries where English is either the primary or dominant language as approved by the UCI Graduate Council must submit a passing score from the Test of Spoken English (TSE).

REQUIREMENTS

All students must show competence in the core areas of microeconomics, macroeconomics, and econometrics. This is done by taking the three-quarter required course sequences in microeconomics and macroeconomics, and the four-quarter required course sequence in econometrics.

A student can take the oral candidacy examination after completing the 10 required core courses with no grade lower than a B and with a grade point average across all graduate courses of at least 3.25. The student must also complete a research paper that consists of an extended literature review in a subfield approved by the graduate committee or a replication and extension of an empirical paper published in a refereed economics journal. A well-prepared student should take this oral examination at the end of the fourth or fifth quarter. The normative time for advancement to candidacy is two years (six quarters).

Students also must master two fields of applied economics by taking a two-course sequence (possibly including independent reading courses) and writing a research paper in each field. Students also must enroll for at least four quarters in the graduate colloquium, in which attendance at regular Economics faculty research colloquia is supplemented by discussion of the papers presented and additional reading. Students are encouraged to become conversant with areas of current economic research early in their graduate careers, in order to facilitate a timely transition from meeting course and field requirements to thinking through a dissertation research plan.

Two or three quarters before the expected completion of the dissertation, the dissertation committee will organize an oral examination of the candidate's dissertation prospectus. Ordinarily, the prospectus will describe in detail the dissertation, and will typically be accompanied by at least one completed chapter of the dissertation.

Students are expected to complete their dissertation by the end of their fifth year. The maximum time permitted for completion of the Ph.D. is six years.

Concentration in Transportation Economics

Students can also pursue a Ph.D. in Economics with a concentration in Transportation Economics. This option draws upon the transportation researchers on the campus within the School of Social Sciences, The Henry Samueli School of Engineering, The Paul Merage School of Business, and the School of Social Ecology. Students benefit from association with the Institute of Transportation Studies, which facilitates student research by providing research assistantships and interdisciplinary seminars on all modes of transportation.

Requirements for the concentration are the same as those described above with the following three exceptions: (1) instead of the third quarter of microeconomics and macroeconomics, students may substitute specified courses such as Discrete Choice Econometrics (Economics 223A), Advanced Travel Demand Analysis (Engineering CEE220A), or Operations Research for Management (Management 201B); (2) one of the student's two required fields of competence must be transportation economics; the other must be a related field such as urban economics, labor economics, industrial organization, or a transportation-related field from outside economics (such as travel demand and flow theory, urban and transportation policy analysis, environmental impacts of transportation, or urban and transportation planning) subject to the approval of the Director of Graduate Studies for Economics; and (3) students must take at least one additional course from a list of designated courses in transportation and related subject areas.

Concentration in Public Choice

Students can also pursue a Ph.D. degree in Economics with a concentration in Public Choice. This is an interdisciplinary field, at the intersection of Economics and Political Science, which draws on quantitative tools to model the functioning of political institutions. Faculty from the Departments of Economics, Political Science, and Logic and Philosophy of Science and from The Paul Merage School of Business are involved in research that supports the concentration.

Students who elect this concentration are admitted under the normal procedures for the program in Economics and must fulfill all the requirements for the Economics degree with the following modifications: (1) one of the student's two required fields of competence must be public choice; included is a three-quarter core course in public choice, Economics 270A-B-C, which is jointly organized by faculty in the Departments of Economics and Political Science. (A background in economic theory is a prerequisite to this sequence.) The requirement for competence in a second field may be met with a one-quarter course, instead of two, if it provides sufficient fluency in the field; and (2) students must obtain a background knowledge in political science equivalent to that provided by a one-year undergraduate survey course, if they do not already have it.

RESEARCH FACILITIES

UCI is a major research university with an excellent library, as well as special interlibrary loan arrangements with other University of California libraries. The School of Social Sciences provides a computer laboratory. The Economics Department has a small library with current journals and unpublished working papers from other universities. Students also have access to advanced computing resources as well as PC and UNIX laboratories. Three Organized Research Units, the Institute of Transportation Studies, the Center for Research on Information Technology and Organizations, and the Institute for Mathematical Behavioral Sciences, provide research opportunities for graduate students.

Courses in Economics

(Schedule of Classes **designation: Econ)**

NOTE: Students are reminded that each quarter of a sequential course (i.e., Economics 100A-B-C) must be taken in order. Priority for admission to upper-division Economics courses is given to Economics majors and International Studies majors.

LOWER-DIVISION

1 Introduction to Economics (4) F, W, S. An analysis of the problems society faces in organizing itself to provide goods and services. How decisions of government, business, and the individual relate to current economic problems such as unemployment, inflation, poverty, and environmental pollution. Open only to non-Economics majors. Credit will not be given for Economics 1 if taken concurrently or after Economics 20A-B. **(III)**

11 The Internet and Public Policy (4). How the Internet works. Current public policy issues concerning the Internet. Introductory economics. Communications law. Interactions between information technology, economics, and law. Case studies about Internet and communications policy. Same as ICS 11. **(II or III)**

13 Global Economy (4) S. Acquaints students with the fundamental patterns of the global economy. Emphasizes the historical roots and political implications of economic choices. Same as International Studies 13. **(III, VIII)**

15A-B Probability and Statistics in Economics I, II (4-4) F, W. An introduction to probability, statistics, and econometrics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Examples from economics. Prerequisites: Mathematics 2A-B and 4. No credit for Management 7 if taken after Economics 15A-B. Management 7 may not be used to substitute for Economics 15A-B.

17 An Economic Approach to Religion (4) F. Introduction to how basic economic concepts such as demand, supply, consumption, production, competition, free-riding, innovation, regulation, and rent-seeking can be applied to understand observed religious behavior. Same as Religious Studies 17. **(III)**

20A-B Basic Economics I, II (4-4) F, W. 20A: The fundamentals of microeconomics. The behavior of firms and of consumers: markets, supply/demand, utility maximization, resource allocation, and efficiency. Economics 20A and 23 may not both be taken for credit. **20B:** The fundamentals of macroeconomics. Government behavior: monetary and fiscal policy, inflation, and unemployment. **(III)** *Effective fall 2006, the content of Economics 20B is macroeconomics. This course cannot be taken to repeat Economics 20B taken prior to fall 2006.*

23 Basic Economics for Engineers (4). The fundamentals of microeconomics. The behavior of firms and of consumers: markets, supply/demand, utility maximization, resource allocation, and efficiency. Economics 23 and 20A may not both be taken for credit. **(III)**

25 The Economics of Accounting Decisions (4). Introduction to accounting concepts and principles, including the accounting model and accounting style, transaction analysis, and preparation of financial statements. An analysis of the similarities and differences between accounting and economic concepts (e.g., value, profits). Prerequisite: Economics 20A. Formerly Economics 102A. Economics 25 and Management 30A may not both be taken for credit.

26A Managerial Accounting (4). An introduction to the fundamentals of management accounting, including the study of terms and concepts, comparisons of different costing systems, analysis of cost-volume profit relationships, preparation of information for planning, control, and evaluation of performance, and decision analysis. Prerequisites: Mathematics 2A-B and 4. Economics 26A and Management 30B may not both be taken for credit.

UPPER-DIVISION

100–119: GENERAL ECONOMICS

100A-B-C Intermediate Economics I, II, III (4-4-4) F, W, S. Determinants of supply and demand; operation of competitive and monopolistic markets; imperfections of the market system, explanations of unemployment, inflation, recessions; public policy for macroeconomic problems. Prerequisites: Economics 20A-B and Mathematics 2A-B or equivalent. For 100B: Economics 100A. For 100C: Economics 100B. Economics 100A-B-C and 105A-B-C may not both be taken for credit.

105A-B-C Intermediate Quantitative Microeconomics and Macroeconomics I, II, III (4-4-4) F, W, S. An advanced and mathematical version of Economics 100A-B-C for students in the Quantitative Economics major. Prerequisites: Economics 20A-B and Mathematics 2A-B, 3A, and 4. Economics 105A-B-C and 100A-B-C may not both be taken for credit.

107 Economics of Asymmetric Information (4). Focuses on the effects of asymmetric information in the markets for traditional economic goods and resources, such as labor, insurance, used cars, credit, and in auctions and bargaining problems. Prerequisite: Economics 100A or 105A.

109 Special Topics in Economic Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

115 Behavioral Economics (4). Studies the behavioral and psychological biases in economics settings. Both individual decisions and games are discussed. Prerequisites: Economics 20A-B.

116A-B Game Theory I, II (4-4). A two-quarter sequence on game theory. **116A:** Extensive form games with perfect information, and coalitional games. The key solution concepts are Nash Equilibrium, Backward Induction, and the Core. Substantive examples include public good production, oligopoly, electoral competition, auctions, holdup, market entry, and voting. Formerly Economics 116. **116B:** Bayesian games, extensive form games with imperfect information, zero-sum games, rationalizability, evolutionary equilibrium, repeated games, and bargaining. The key solution concepts are Bayesian Nash Equilibrium, Subgame Perfect Equilibrium, Maxminimization, and Evolutionary Stable Strategies. Prerequisites: Economics 15A-B and 100A or 105A.

120–124: QUANTITATIVE METHODS

122A-B Applied Econometrics I, II (4-4). Introduction to econometrics emphasizing practical applications in microeconomics and macroeconomics. Prerequisites: Economics 15A-B, 20A-B. Economics 122A-B and 123A-B may not both be taken for credit.

122C Data Analysis Writing (4). A research writing course in econometrics focusing on individual research projects that are designed and written during the quarter. Students employ econometric analysis to address an economic question in a 20-page paper and present their findings to the class in a short presentation. Prerequisites: Economics 15A-B and 122A-B; satisfactory completion of the lower-division writing requirement.

123A-B-C Econometrics I, II, III (4-4-4) F, W, S. 123A-B: Specification, estimation, and testing of econometric models. Applications in various areas of microeconomics and macroeconomics. **123C:** Seminar course in which students do an original econometric research project. Prerequisites: Mathematics 2A-B and 4 or equivalent; Statistics 120A-B-C and Economics 100A-B-C. For 123C: satisfactory completion of the lower-division writing requirement. Economics 123A-B and 122A-B may not both be taken for credit.

125 Business Forecasting (4). Students learn how to produce forecasts of the behavior of economic (and other) variables. The techniques examined are linear regression, nonlinear regression, and nonparametric kernel regression, AR, MA, ARMA, ARIMA, and Box-Jenkins. Prerequisites: Economics 15A-B and 20A-B. Economics 125 and Management 180 may not both be taken for credit.

129 Special Topics in Quantitative Methods (4). Prerequisites vary. May be repeated for credit as topic varies.

130–139: FINANCIAL ECONOMICS

131A The Economics of Risk and Uncertainty (4). The theory of insurance and joint-ownership of risky enterprises; optimal procedures for the allocation of uncertain payoffs. Prerequisites: prior or concurrent enrollment in Economics 15A-B or equivalent; Economics 100A-B or 105A.

132A Introduction to Financial Investments (4). Modern theories of investment and their application to the study of financial markets. The relation between risk and return, diversification, asset pricing, efficient markets hypothesis, and the market valuation of stocks, bonds, options, and futures. Prerequisites: Economics 15A-B and 122A or equivalent; Economics 100A-B-C or 105A-B-C. Concurrent enrollment in Economics 100C or 105C sufficient. Economics 132A and Management 141 may not both be taken for credit.

134A Corporate Finance (4). Provides an overview of the modern theory and practice of corporate finance and focuses on two fundamental financial decisions; investment as well as financing. Prerequisites: Economics 100A-B-C or 105A. Economics 134A and Management 109 may not both be taken for credit.

135 Mathematics of Finance (4). Introduces the mathematics of finance with an emphasis on financial derivatives. After a review of certain tools from probability, statistics, and elementary differential and partial differential equations, concepts such as hedging, arbitrage, Puts, Calls, and the design of portfolios are discussed. Prerequisites: Mathematics 2A-B-J. Same as Mathematics 176.

139 Special Topics in Financial Economics (4). Prerequisites vary. May be repeated for credit as topic varies.

140–149: ECONOMICS OF PUBLIC AND PRIVATE ORGANIZATIONS

140 Managerial Economics (4). Managerial economics is a collection of concepts and methods for effective decision making. Explores how the tools of microeconomics, including game theory and industrial organization theory, can be used to make better managerial decisions, particularly those involving allocation of resources within firms. Prerequisite: Economics 100A-B.

141A-B-C Public Economics I, II, III (4-4-4). 141A: Examines the role of government expenditure in the economy from both a theoretical and an empirical perspective, with a focus on two broad categories of government expenditures policies: social insurance and redistribution programs. Analysis of taxation. **141B:** Theory of public goods, externalities, voting models, analysis of bureaucracy, the Tiebout model, income redistribution, intergovernmental grants. **141C:** Allows students to apply knowledge of public economics in the conduct of individual research. Prerequisites: Economics 100A-B or 105A or consent of instructor. For 141C: satisfactory completion of the lower-division writing requirement. Same as Political Science 127A-B-C.

142A-B-C Industrial Organization I, II, III (4-4-4) F, W, S. 142A: The theory of market structure. Imperfect markets, government policies, and industry performance. **142B:** Regulation and antitrust theory and performance in industries. **142C:** Research in industrial organization. Prerequisites: Economics 15A-B and 100A-B or 105A. For 142C: satisfactory completion of the lower-division writing requirement.

143 Energy Economics (4). The economics of markets for oil, natural gas, electricity, renewable energy and their interactions with each other and the rest of the economy. Effects of government intervention, traditional policy measures, economic policy issues arising from relationship of energy use and the environment. Prerequisites: Economics 100A-B-C or 105A.

144A-B-C Urban Economics I, II, III (4-4-4). 144A: Why cities exist, economics of urban land use, housing demand and tenure choice, urban amenities. **144B:** Economics of traffic congestion, housing policy analysis, Third World urbanization, urban public goods and services, crime, neighborhood effects. **144C:** Allows students to apply knowledge of urban economics in the conduct of individual research. Prerequisites: Economics 20A-B; Economics 100A recommended. For 144C: satisfactory completion of the lower-division writing requirement.

145E Economics of the Environment (4). Surveys economic aspects of natural resources, pollution, population, and the environment. Examines the causes of pollution, e.g., air, water, noise, toxic waste, and nonoptimal utilization of certain resources, e.g., fisheries; analysis of public polices regarding these problems. Emphasis on microeconomic aspects of environmental problems. Prerequisites: Economics 15A-B and 122A or equivalent; Economics 100A-B or 105A.

145F Economics of the Environment II (4). Applications of the tools covered in Economics 145E to such topics as global warming, destruction of the ozone layer, and emissions trading. Emphasis on independent research papers. Syllabus and classes include writing technique. Prerequisites: Economics 15A-B, 145E, and satisfactory completion of the lower-division writing requirement.

145L Economics of Law (4). Examination of several economic concepts which are useful in understanding legal rules: externalities, the assignment of property rights, and Coase's theorem. Examples are drawn from the fields of pollution control, no-fault insurance, medical malpractice, and product liability. Prerequisites: Economics 100A-B or 105A, or concurrent enrollment in Economics 100B.

146 Public Policy Issues (4). An examination and interpretation of the public policy areas such as schooling, housing and homelessness, occupational licensing, F.D.A. drug approval, credit bureaus, the U.S. Postal Service, and auto emissions. Prerequisites: Economics 15A-B or equivalent; 100A-B-C or 105A; satisfactory completion of the lower-division writing requirement.

147A Corporate Governance (4). Studies topics in the internal organization of firms, including rent seeking, incentive contracts, principal-agent problems, internal labor markets, contests, and herd behavior. Prerequisite: Economics 100A. Formerly Economics 147.

147B Economics of Strategy (4). Uses of tools of economics, game theory in particular, to develop an understanding of business decision making. Deals with questions such as how the firm decides what kind of business to be in, how large should it be, and others. Prerequisites: Economics 100A-B-C or Economics 105A. Economics 147B and Management 110 may not both be taken for credit. Economics 147B and Management 168 may not both be taken for credit.

149 Special Topics in Economics of Public and Private Organizations (4). Prerequisites vary. May be repeated for credit as topic varies.

150–159: HUMAN RESOURCES

151A-B-C Labor Economics and Human Resources I, II, III (4-4-4). **151A:** Labor demand, labor supply, human capital, personnel economics, and other topics. **151B:** Labor market discrimination, compensating wage differentials, immigration, and other topics. **151C:** Original research by students. Prerequisites: Mathematics 2A-B; Economics 15A and either 100A-B or 105A-B. For 151C: satisfactory completion of the lower-division writing requirement.

152A Economic Anthropology (4). Economic systems in comparative perspective: production, distribution, and consumption in market and non-market societies; agricultural development in the third world. Prerequisite: one course in general science, anthropology, economics, geography, or sociology. Same as Anthropology 125A. **(VIII)**

154A Economics of Complex Systems (4). Students are required to write a paper about social systems as complex adaptive systems. Lectures are presented by interactive video from UCLA. Prerequisites: Economics 20A-B and satisfactory completion of the lower-division writing requirement.

155A Economics of the Family (4). Students write and rewrite papers on topics that are suggested by the models and literature in the "economics of the family." Prerequisites: Economics 15A-B or equivalent; 100A-B-C or 105A; satisfactory completion of the lower-division writing requirement.

156 The Economics of Population Issues (4). Applies economic analysis to population issues, including determinants of key aspects of demographic change—fertility, mortality, internal and international migration—and their implications. Shows how economics can be used to study couples' decisions about how many children to have. Prerequisites: Economics 15A-B, 20A-B, and satisfactory completion of the lower-division writing requirement. Economics 100A-B-C or 105A and 122A-B are recommended.

157 Economic Development (4). Considers the process of economic development across the globe and why some countries are rich and others poor. Discusses the major problems facing developing countries, such as population growth, education, capital formation, environmental protection, and international trade. Prerequisites: Economics 20A-B.

158 Economics of Education (4). Arms students with tools, concepts, and evidence that can be used to analyze complex policy questions in education, enabling students to arrive at their own reasoned judgments about how to improve education. Prerequisites: Economics 15A, 100A, and satisfactory completion of the lower-division writing requirement.

159 Special Topics in Economics in Human Resources (4). Prerequisites vary. May be repeated for credit as topic varies.

160–169: MACROECONOMICS

161A Money and Banking (4). Basic elements of money and banking: institutional features and economics of financial markets and, in particular, of the U.S. banking system; determinants of interest rates; the Federal Reserve and its role in the money supply process; effects of money on output and inflation. Prerequisites: Economics 100A-B-C or 105A-B-C. Concurrent enrollment in 100C or 105C sufficient.

161B International Money (4). Open economy macroeconomics and determination of exchange rates. Asset-market approach to the balance of payments. Internal and external balance in the economy. Macroeconomic policies under fixed and floating exchange rates. The international monetary system and institutions. Prerequisites: Economics 100A-B-C or 100A-B and concurrent enrollment in 100C.

161C International Trade and Commercial Policy (4). Determination of trade flows and the relative prices. Gains from trade, the terms of trade, and income distribution. Imperfect competition and international trade. The effect of tariffs, export subsidies, and import quotas. The effects of free and restricted trade on economic welfare. Prerequisites: Economics 15A-B or equivalent; 100A-B or 100A and concurrent enrollment in 100B.

161D Advanced Money and Banking (4). Studies business cycles in the United States during the last century. The first portion of the course reviews the theoretical models employed to study economic fluctuations and empirical methods used to measure fluctuations. Prerequisites: Economics 15A-B; 100A-B-C or 105A-B-C.

163 Communism in Russia and China (4). Examines the politics, economics, and history of revolutionary Marxism during the twentieth century. Begins by discussing the theoretical foundation of communism and then contrasting those theories with the actual institutions established in communist nations and with socialist, capitalist, and democratic systems. Prerequisites: Economics 20A-B.

164A The Industrial Revolution in Western Europe (4). How do economists explain the process of economic development during the past three centuries? How has the process of industrialization affected living standards? In focusing on these questions, students learn how to apply economic theory and quantitative methods to the study of historical issues. Prerequisites: Economics 100A-B-C or 105A; satisfactory completion of the lower-division writing requirement.

164B The Industrial Revolution in the United States (4). How do economists explain the process of economic development during the past three centuries? How has the process of industrialization affected living standards? In focusing on these questions, students learn how to apply economic theory and quantitative methods to the study of historical issues. Prerequisites: Economics 100A-B-C or 105A; satisfactory completion of the lower-division writing requirement.

169 Special Topics in Development Economics (4). Prerequisites vary. May be repeated for credit as topic varies.

H190A-B Economics Honors Colloquium I, II (4-4). Colloquium required for honors students in Economics, Quantitative Economics, and Business Economics. Introduces students to independent research. Helps students plan a research program. **H190A:** Prepares students for thesis writing. **H190B:** Students complete their thesis. Prerequisites: must be enrolled in the Honors Program in Economics; satisfactory completion of the lower-division writing requirement.

199 Independent Study (1 to 5). May be repeated for credit as topics vary.

GRADUATE

200A-B-C Graduate Colloquium for Economics I, II, III (2-2-2) F, W, S. Weekly reports and colloquia by faculty, students, and visitors. Supplemented by class discussion of these presentations and other material on current research methodology. Prerequisite: admission to graduate program in Economics or consent of instructor. May be repeated for credit.

203A Mathematics for Economists (4). Gives students the mathematical background required for graduate work in economics. Topics covered include multivariate calculus, differential equations, and linear algebra. Prerequisite: graduate standing or consent of instructor.

205A Research Writing in Economics (4). For Economics graduate students who are writing their required research paper in an applied field. How to write an original paper in economics. Guidance for specific papers. Prerequisite: admission to the graduate program in Economics.

206 How to Write a Paper (2 to 4). A course on writing. Also discusses how to make an oral presentation, how to go about doing research, and how academic journals operate. Grade based on two written assignments in which student edits and revises a paper.

210–219: GRADUATE ECONOMIC THEORY

210A-B-C Microeconomic Theory I, II, III (4-4-4) W, S. Theoretical microeconomics. Emphasis on the meaning and empirical interpretation of theoretical models. Topics include theory of the firm, theory of the market, theory of the consumer, duality theory, application to econometrics, general equilibrium and welfare economics, uncertainty, game theory. Prerequisite: graduate standing or consent of instructor.

210D-E-F Macroeconomic Theory I, II, III (4-4-4) F, W, S. Advanced macroeconomic theory including alternative macroeconomic models, microeconomic foundations of macroeconomics, investment and growth theory, inflation and unemployment, rational expectations and macroeconomic policy, wealth effects, crowding out and fiscal policy, money and interest, open economy models. **210E:** Corequisite: Economics 211L. Prerequisite: graduate standing.

211L Macroeconomics Theory II Laboratory (2) W. Overview of stochastic processes; introduction to dynamic programming; two equilibrium concepts; Ricardian equivalence; real business cycle model; complete versus incomplete markets; asset pricing and the equity premium puzzle. Corequisite: Economics 210E. Prerequisite: graduate standing. Satisfactory/Unsatisfactory only.

219 Special Topics in Economic Theory (2 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topics vary.

220–229: QUANTITATIVE METHODS

220A-B-C-D Statistics and Econometrics I, II, III, IV (4-4-4-4). 220A: Covers probability mathematical statistics necessary to prepare students for econometric study and empirical work. Topics include probability theory, distributions, sampling, and classical point estimation. A likelihood perspective is emphasized. **220B:** Begins with Bayesian point estimation. Then covers interval estimation and hypothesis testing from both classical and Bayesian perspectives, followed by a general discussion of prediction. Finally, all these techniques are applied to the standard linear regression model under ideal conditions. **220C:** Begins by relaxing the ideal conditions of the standard regression model. Topics include kernel density estimation, Generalized Least Squares (GLS), instrumental variables (IV), two stage least squares (2SLS), panel data models, and simulation-based Bayesian methods, including Gibbs sampling. **220D:** Begins by reviewing estimation theory and the bootstrap. Topics include econometric time series, discrete choice and count models, sample selection, and duration models. Covers both Bayesian and classical asymptotic methods.

221A-B-C-D Statistics and Econometrics Laboratory I, II, III, IV (2-2-2-4). 221A-B-C: Discussion of problems in statistics and econometrics and their relationship to statistical and econometric theory. Instruction in the use of computers for applied econometric work. **221D:** Before the course begins, students choose a published empirical economics article and obtain the necessary data to replicate it. Then, students replicate and extend the economic analysis and write a paper describing their work. Satisfies econometrics requirement for the Ph.D. in Economics. Corequisites: Economics 220A-B-C-D.

223A Discrete Choice Econometrics (4). Specification, estimation, and testing of discrete choice models, with emphasis on cross-sectional, application. Qualitative choice, limited dependent variables, sample selection bias, and latent variables. Students use computer packages to apply models to real data. Prerequisites: Economics 220A-B-C-D.

224A Time Series Econometrics (4). Econometric analysis of time series data. Moving average and autoregressive series, regression analysis, Box-Jenkins techniques, computational methods, and causality conditions. Prerequisites: Economics 220A-B-C-D.

229 Special Topics in Social Dynamics Seminar (4). Prerequisites vary. May be repeated for credit as topics vary.

230–239: ECONOMIC AND FINANCIAL HISTORY

231A-B Institutions in Historical Perspective I, II (4-4). Investigates economic and political institutions across the world and throughout history. Focuses on institutions such as property rights, political regimes, regulations, legal systems, corporate organization, and social norms. Prerequisites: Economics 210 A-B-C-D-E-F or consent of instructor.

232 Business Cycles in Historical Perspective (4). Investigates business cycles in the United States and worldwide during the last two centuries. Topics include causes and consequences of business fluctuations, monetary and fiscal policy, models of fluctuations, and empirical macroeconomics. Prerequisites: Economics 210A-B-C-D-E-F or consent of instructor. Formerly Economics 262A.

233 European Economic History (4). Focuses on European economic history between 1500 and 1910. Examines the causes of the Industrial Revolution and globalization. Particular topics: productivity growth, transport improvements, technological change, capital markets, property rights, international trade. Prerequisites: Economics 210A-B-C-D-E-F or consent of instructor. Formerly Economics 242A.

234 American Economic History (4). Focuses on American economic history from colonization onwards. Topics include the development of legal systems, transport systems, financial markets, industrialization, migration, immigration, technological change, and the consequences of slavery. Prerequisites: Economics 210A-B-C-D-E-F or consent of instructor. Formerly Economics 244A.

239 Special Topics in Financial Economics (2 to 4). Prerequisites vary. May be repeated for credit as topics vary.

240–249: MICROECONOMICS

241A-B Industrial Organization I, II (4-4). Analysis of the structure and economic performance of markets, and the impact of public policy and their efficiency and equity. Effects of information structure. **241A:** Oligopoly, cartels, mergers, vertical integration, patents, innovation, antitrust, and regulation; **241B:** price flexibility and dispersion, auctions, search and industrial structure, intrafirm organization. Prerequisites: Economics 100B and 203A.

241C Industrial Organization III (4). Open to graduate students who have completed the first two quarter of the graduate Industrial Organization (IO) sequence and to other students with consent of instructor. Students are expected to have started a field paper in IO during the earlier quarters, and will finish a completed draft of it during this quarter. Prerequisites: Economics 100B, 203A, and 241A-B; graduate standing or consent of instructor.

243A Game Theory (4). A formal introduction to noncooperative game theory. Topics include properties of Nash Equilibrium and equilibrium refinements, dynamic games, repeated games, games with imperfect information, and games with incomplete information. Prerequisites: Economics 201A-B-C; graduate standing or consent of instructor.

243B Advanced Game Theory (4). Provides advanced instruction and research opportunities in game theory for students interested in using game theory in their research. Prerequisites: Economics 243A and consent of instructor.

245 Empirical Methods in Applied Microeconomics (4). Focuses on the empirical methods used in modern applied microeconomics. Teaches students methods that can be applied to produce original research in applied fields using cross-sectional and panel data. Applications will be drawn heavily from labor, public, health and development economics.

249 Special Topics in Microeconomics (2 to 4). Prerequisites vary. May be repeated for credit as topics vary.

250–259: HUMAN RESOURCES

251A-B Labor Economics I, II (4-4). Analytic and empirical study of labor markets. Topics may include labor supply and demand, human capital, educational sorting, life-time earnings profiles, discrimination, unemployment, and unions; several econometric techniques are taught as needed. Prerequisites: Economics 203A and graduate standing or consent of instructor.

259 Special Topics in Human Resources (2 to 4). Prerequisites vary. May be repeated for credit as topics vary.

260–269: MACROECONOMICS

260A-B Monetary Economics I, II (4-4). 260A: Focuses on the derivation and estimation of state-of-the-art Dynamic Stochastic General Equilibrium (DSGE) models, with particular emphasis on models useful for monetary policy. **260B:** Surveys recent issues on monetary policy in uncertain environments. Examines settings where both the policy makers and the private sector are uncertain of future outcomes or the underlying economic structure. Formerly Economics 225A-B.

261A-B International Trade I, II (4-4). Covers theoretical models, empirical methods, and policy issues in international trade. Following the conventional treatment of the Ricardian model, the Heckscher-Ohlin model, and the specific factors model; new trade models which incorporate scale economies and imperfect competition are discussed. Prerequisite: Economics 210A-B.

263A-B Advanced Macroeconomics I, II (4-4). 263A: Students build Dynamic Stochastic General Equilibrium (DSGE) macroeconomic models from microeconomic foundations. This approach emphasizes intertemporal optimization by firms and households and typically incorporates nominal rigidities such as sluggish price and/or wage adjustment. **263B:** Extensively studies policy in dynamic models. Topics: rule versus discretionary-based policy and its implications for macroeconomic stability and multiple equilibria; the design of optimal monetary policy; economic policy with model uncertainty and when the economic model is unknown.

269 Special Topics in Macroeconomics (2 to 4). Prerequisites vary. May be repeated for credit as topics vary.

270–279: PUBLIC CHOICE

270A-B-C Seminar in Public Choice I, II, III (4-4-4). Public choice lies at the intersection of economics and political science. This course involves the use of tools derived from economics to understand the behavior of governments and of citizens when they deal with politics. Prerequisite: graduate standing and Social Science 111H. Same as Political Science 270A-B-C.

271A Institutions in Historical Perspective (4). Investigates economic and political institutions across the world and throughout history. Focuses on institutions such as property rights, political regimes, regulations, legal systems, corporate organization, and social norms. Prerequisites: Economics 210A-B-C-D-E-F or consent of instructor.

272A-B-C Public Economics I, II, III (4-4-4). 272A: Covers welfare economics and the theory of optimal taxation. **272B:** Covers the theory of public goods and models of decentralized provision of such goods, including voluntary provision, voting, bureaucratic provision, and preference relevation mechanisms. **272C:** Covers two broad categories of government expenditure policies, redistribution programs and social insurance, from a theoretical and empirical perspective. Prerequisites: Economics 210A-B-C.

279 Special Topics in Public Choice (2 to 4). Prerequisites vary. May be repeated for credit as topics vary.

280–289: URBAN AND TRANSPORTATION ECONOMICS

281A-B Urban Economics I, II (4-4). Theoretical and empirical analysis of the economic functioning of urban areas. Urban economic development, location of firms and households, housing markets, urban public finance. Econometric estimation of hedonic price functions for housing. Prerequisite: Economics 210A or equivalent.

282A-B Transportation Economics I, II (4-4). 282A: Applies microeconomic concepts of demand, costs, pricing, investment, and project evaluation to analyze transportation activities. Empirical studies include travel demand using discrete models, and cost functions. **282B:** Policy analysis in the presence of road transport externalities (such as environmental spill-overs), imperfect instruments, and other economic distortions such as imperfectly priced networks and imperfect competition. Connections of transportation economics with environmental economics, public finance, spatial economics and industrial organization.

285A-B-C Colloquium for Transportation Science I, II, III (2-2-2). Selected perspectives on transportation based on the study of human behavior. Organized by Interdisciplinary Program in Transportation Science. Research presentations by faculty, students, and visitors supplemented by class discussion. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

289 Special Topics in Urban and Transportation Economics (2 to 4). Prerequisites vary. May be repeated for credit as topics vary.

290–299: SPECIAL COURSES

290 Dissertation Research (2 to 12). Prerequisite: consent of instructor. May be repeated for credit.

299 Independent Study (2 to 4). Prerequisite: consent of instructor. May be repeated for credit.

THE CURRICULUM IN GEOGRAPHY

The curriculum in geography covers such topics as the evolution of the landscape, arrangement of urban centers, the internal structure of cities, the arrangement of industrial and agricultural activities, the pattern of movement of people, goods and ideas, and relationships between humans and the environment.

Courses in Geography

***(Schedule of Classes* designation: Soc Sci)**

LOWER-DIVISION

Social Science 5 Introduction to Geography. Basic introduction to geography.

5A Introduction to Human Geography (4). Human behavior in a geographical context. Spatial patterns and organization of the cultural, social, and economic activities of man as imposed on and influenced by the earth's physical setting. **(III)**

5B Introduction to Physical Geography (4). An introduction to the physical world we live in. Distribution and dynamics of the earth's air, water, and solid crust. Concepts and principles from climatology and geology. Selected examples from North America and beyond.

5C Environment and Resources (4). Analysis of landscapes, with special attention to California and the West. Emphasis on humans as agents of environmental change. **(III)**

5D U.S. and World Geography (4). Provides a broad survey of general geographical principles and facts on a world scale as well as introduces students to the broad regional and resource geography of the U.S., emphasizing in particular the interactions of physical and cultural factors. **(III, VIII)**

Social Science 18A Evolution of Landforms (4). Introduction to geomorphology; major forces which shape the relief of the earth's surface and the forms which result from their activity. General principles demonstrated using examples from the western United States with special emphasis on California.

UPPER-DIVISION

Course modules emphasizing geography are assigned numbers 118 and 119.

Social Science 118 Geographical Analysis

118C Transportation Theory (4). Advanced topics in transportation systems analysis and planning; land-use and traffic generation; traffic flow and network theory; transportation impact; transportation policy. Emphasis on theoretical approaches and mathematical models. Prerequisites: Economics 20A-B-C.

118F Urban Analysis (4). Students participate in design of an urban research project; involves analysis of transit systems and their relationship to urban structure of metropolitan areas. Focus is on the methodology of evaluation research as it relates to public programs and public policy analysis. Prerequisite: consent of instructor.

118G Regional Geography of California (4). Geographical analysis of selected regions of California, in particular their geomorphological, hydrological, and climatic conditions, as well as their economic and social strengths and weaknesses. Includes discussion of Orange County on environmental, social, and residential problems.

118L Spatial Structure of Metropolitan Areas (4). The spatial arrangement of activities in U.S. metropolitan areas. Identification of the economic, social, and technological processes which affect urban spatial structure. The processes of urbanization and suburbanization are discussed, and the policy implications of contemporary urban spatial structure are examined. Prerequisites: upper-division status and either Economics 1 or 20A-B; Social Science 5A recommended.

Social Science 119A-Z Special Topics in Geography (4) F, W, S. May be repeated for credit. Prerequisites vary.

THE UNDERGRADUATE MAJOR IN INTERNATIONAL STUDIES

569 Social Science Tower; (949) 824-8687
http://internationalstudies.ss.uci.edu/index.php
Deborah D. Avant, **Director**

Affiliated Faculty

Deborah D. Avant, *Director of International Studies and Professor of Political Science*
Marc Baer, *Associate Professor of History*
Nina Bandelj, *Associate Professor of Sociology*
Frank Bean, *Director of the Center for Research on Immigration, Population, and Public Policy, and UCI Chancellor's Professor of Sociology*
Victoria Beard, *Associate Professor of Planning, Policy, and Design*
Victoria Bernal, *Associate Professor of Anthropology*
Tom Boellstorff, *Professor of Anthropology*
Scott A. Bollens, *Professor of Planning, Policy, and Design and Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation*
Carolyn P. Boyd, *Professor of History*
Susan K. Brown, *Associate Professor of Sociology*
Daniel Brunstetter, *Assistant Professor of Political Science*
Alison Brysk, *Professor of Political Science*
Carol M. Burke, *Director of Religious Studies and Professor of English*
Michael L. Burton, *Professor Emeritus of Anthropology*
Vinayak Chaturvedi, *Associate Professor of History*
Leo R. Chávez, *Director of the Center for the Study of Latinos in a Global Society and Professor of Anthropology*
Yong Chen, *Associate Professor of History and Asian American Studies*
Susan Bibler Coutin, *Associate Dean of the Graduate Division and Professor of Criminology, Law and Society and of Anthropology*
Russell J. Dalton, *Professor of Political Science*
Arthur DeVany, *Professor Emeritus of Economics*
Joseph F. DiMento, *Professor of Planning, Policy, and Design; Law; Environmental Health, Science, and Policy; and Management*
Julia Elyachar, *Assistant Professor of Anthropology*
Sarah Farmer, *Associate Professor of History*
Raúl Fernández, *Director of the UC-Cuba Academic Initiative and Professor of Chicano/Latino Studies and Social Sciences*
David John Frank, *Associate Professor of Sociology and Education*
Michelle Garfinkel, *Professor of Economics*
James B. Given, *Professor of History*
Amihai Glazer. *Professor of Economics*
David Theo Goldberg, *Director of the UC Humanities Research Institute and Professor of Comparative Literature and of Criminology, Law and Society*
Sara Goodman, *Assistant Professor of Political Science*
John Graham, *Professor Emeritus of Management*
Susan Greenhalgh, *Professor of Anthropology*
Bernard N. Grofman, *Director of the Center for the Study of Democracy, Professor of Political Science and Economics, and Jack W. Peltason Endowed Chair*
Sara Han, *Assistant Professor of Criminology, Law and Society*
Douglas M. Haynes, *Director of the ADVANCE Program for Faculty Equity and Diversity and Associate Professor of History*
Jeremy Heis, *Assistant Professor of Logic and Philosophy of Science*
Lamar M. Hill, *Professor Emeritus of History*
Ann Hironaka, *Associate Professor of Sociology*
Helen Ingram, *Professor Emerita of Planning, Policy, and Design*
Jon Jacobson, *Professor Emeritus of History*
Winston James, *Professor of History*
Marek Kaminiski, *Associate Professor of Political Science*
Diana Kapiszewski, *Assistant Professor of Political Science*
Jennifer Lee, *Associate Professor of Sociology*
Karen Leonard, *Director of the Center for Asian Studies and Professor of Anthropology*
Mark A. LeVine, *Professor of History*
Cecelia Lynch, *Director of the Center for Global Peace and Conflict Studies and Professor of Political Science*
Lynn Mally, *Professor of History*
Richard Matthew, *Director of the Center for Unconventional Security Affairs and Associate Professor of Planning, Policy, and Design and of Political Science*
George Marcus, *UCI Chancellor's Professor of Anthropology*
Michael McBride, *Associate Professor of Economics*
Martin C. McGuire, *Professor Emeritus of Economics*
David S. Meyer, *Professor of Sociology*
Fabio Milani, *Assistant Professor of Economics*
Jack R. Miles, *UCI Distinguished Professor of English*
Laura Mitchell, Ph.D. University of California, Los Angeles, *Director of History Graduate Studies and Associate Professor of History*
Robert G. Moeller, *Department Chair and Professor of History*
Kristen R. Monroe, *Director of the Interdisciplinary Center for the Scientific Study of Ethics and Morality and Professor of Political Science*
Patrick Morgan, *Professor of Political Science and Thomas T. and Elizabeth C. Tierney Chair in Global Peace and Conflict Studies*
Keith L. Nelson, *Professor Emeritus of History*
Riley Newman, *Professor Emeritus of Physics*
Ngugi wa Thiong'o, *UCI Distinguished Professor of English and Comparative Literature*
Raymond W. Novaco, *Professor of Psychology and Social Behavior*
Kevin Olson, *Associate Professor of Political Science*
Rachel Sarah O'Toole, *Assistant Professor of History*
Kristin Peterson, *Assistant Professor of Anthropology*
Kenneth L. Pomeranz, *UCI Chancellor's Professor of History*
Mark S. Poster, *Professor Emeritus of Film and Media Studies and of History*
Rajagopalan Radhakrishnan, *Professor of English and Comparative Literature*
Priya Ranjan, *Associate Professor of Economics*
Gary Richardson, *Associate Professor of Economics*
Jaime E. Rodríguez, *Professor of History*
Jose Antonio Rodriguez-Lopez, *Assistant Professor of Economics*
Ana Rosas, *Assistant Professor of Chicano/Latino Studies and History*
Emily Rosenberg, *Professor of History*
Rubén G. Rumbaut, *Professor of Sociology*
Kamal Sadiq, *Associate Professor of Political Science*
Wayne Sandholtz, *Professor of Political Science*
Evan Schofer, *Associate Professor of Sociology*
William Schonfeld, *Professor Emeritus of Political Science*
Armin Schwegler, *Professor of Spanish and Portuguese*
Patricia Seed, *Professor of History*
Caesar D. Sereseres, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*
Stergios Skaperdas, *Professor of Economics*
Kenneth Small, *Professor Emeritus of Economics*
David A. Smith, *Professor of Sociology and of Planning, Policy, and Design*
David A. Snow, *UCI Chancellor's Professor of Sociology*
Etel Solingen, *UCI Chancellor's Professor of Political Science*
Dorothy J. Solinger, *Professor of Political Science*
Yang Su, *Assistant Professor of Sociology*
Timothy Tackett, *Professor of History*
Jennifer Terry, *Associate Professor of Women's Studies and Comparative Literature*
Steven C. Topik, *Professor of History*
Judith Treas, *Professor of Sociology*
Robert Uriu, *Associate Professor of Political Science*
Roxanne Varzi, *Associate Professor of Anthropology*
Anne Walthall, *Co-Director of the Minor in Asian Studies and Professor of History and of East Asian Languages and Literatures*
Wang Feng, *Department Chair and Professor of Sociology*
Jeffrey Wasserstrom, *Professor of History*
Douglas White, *Professor Emeritus of Anthropology*
John Whiteley, *Professor of Environmental Health, Science, and Policy*
Mei Zhan, *Associate Professor of Anthropology*

The major in International Studies provides an interdisciplinary perspective on contemporary global issues, societies, and cultures. International Studies majors acquire twenty-first-century analytical skills and knowledge that will enable them to understand and contribute to shaping the rapidly evolving global community. The degree in International Studies prepares students for graduate study and professional careers in a variety of fields in the national and international job markets such as international affairs and public policy, international business and finance, international organizations, and academic research and teaching.

Requirements for the major include a core set of courses: an introductory sequence (Global Cultures and Society, Global Politics, World History and Global Economics), basic economics (micro and macro), one additional lower-division social science course (either World Geography or International Sociology), and two quarters of the International Studies Public Forum. Students then choose both a regional focus (four upper-division courses on Europe and Eurasia, Africa and the Middle East, the Americas, or Asia) and a functional focus (four upper-division courses on Global Security; Global Conflict and Conflict Resolution; International/Comparative Law; International/Transnational Organizations and Movements; Global Ethics and Human Rights; Global Identities: Religion, Nationalism, Gender; Global Trade, Investment, and Finance; Global Development, Public Health, and Environment; or Global Population, Migration, and Diaspora). The final requirements are competence in a language other than English and an international experience.

REQUIREMENTS FOR THE B.A. DEGREE IN INTERNATIONAL STUDIES

University Requirements: See pages 55–62.

School Requirements: See page 460.

Requirements for the Major

A. International Studies 11, 13, 14, and either History 21B or 21C.

B. Economics 20A-B.

C. Social Science (Geography) 5D or Sociology 2.

D. Competency in a language other than English. Competency is established by college-level course work equivalent to UCI's sixth quarter of study (usually 2C).

E. Regional Focus:* Four courses focused on one of the following geographic areas from at least two different disciplines (e.g., political science, sociology, history, economics, etc.) and including material on at least two different countries:

Europe and Eurasia
Africa and the Middle East
The Americas (including the U.S.)
Asia

F. Functional Focus:* Four courses in one of the following areas from at least two different disciplines (e.g., political science, sociology, history, economics, etc.):

Global Security
Global Conflict and Conflict Resolution
International/Comparative Law
International/Transnational Organizations and Movements
Global Ethics and Human Rights
Global Identities: Religion, Nationalism, Gender
Global Trade, Investment, and Finance
Global Development, Public Health, and Environment
Global Population, Migration, and Diaspora

* See http://internationalstudies.ss.uci.edu/interna_studies.php for a list of approved courses. Although some courses are listed in more than one focus, students may not double count a course for both their regional and functional areas. Study abroad counts as one course in the regional focus.

G. Two quarters of Social Science 183A (International Studies Forum), one quarter of which must be taken during the senior year as a capstone experience. (Social Science 183A is a two-unit course so these together count as a four-unit course.)

H. At least one quarter of international experience. Majors are encouraged to study abroad through the Education Abroad Program (EAP) or the International Opportunities Program (IOP), which are available for periods of a quarter, year, or summer. When this is not possible, work overseas (through IOP) or a domestic internship with the UCDC Intership Program, the UCI Washington D.C. Academic Internship Program, or the Social Science Internship Program (Social Science 197) with an international focus may be substituted. Study abroad counts as one course in the regional focus.

HONORS PROGRAM IN INTERNATIONAL STUDIES

The Honors Program allows International Studies majors to engage in research leading to the completion of an honors thesis. The topic for the honors thesis is selected by the student, in consultation with a faculty advisor, and should reflect a theme consistent with the student's module in the International Studies major. The Honors Program is open to all junior and senior International Studies majors with an overall GPA of 3.0 and a 3.5 GPA in the major who have taken all three core courses (International Studies 11, 13, and 14) and at least two upper-division courses that count toward the International Studies major. Successful completion of a written senior thesis in the International Studies 190 course satisfies the upper-division writing general education requirement.

During the spring quarter of the junior year or during the summer before the senior year, students formally apply to the Honors Program. Students will be notified of their selection to the Honors Program by September 1. In the fall quarter of the senior year, students enroll in International Studies H180, Honors Research Seminar. In this course, each student formulates a written research plan (i.e., prospectus) for the honors thesis. Students also select a faculty member who agrees to supervise the research, evaluate the written work, and approve the honors thesis. In the winter quarter of the senior year, students enroll in International Studies H190, Senior Thesis, with their faculty advisor. The faculty advisor supervises and evaluates data collection and analysis and reads and edits chapter drafts. In the spring quarter of the senior year, students enroll in a second quarter of Senior Thesis, with their faculty advisor. The thesis is to be completed by the student and approved by the advisor prior to the end of the quarter.

Honors students must also demonstrate a high level of language proficiency by completing two courses beyond the 2A level in language, literature, or culture taught in their chosen international language.

International Studies majors are also required to pursue some form of international experience, as explained in detail in major requirement H.

SIGMA IOTA RHO: NATIONAL HONORS SOCIETY

The National Honor Society in International Studies was established in 1985, and welcomed the University of California, Irvine, designated Gamma Gamma, as its newest chapter on November 30, 2006. The Gamma Gamma Chapter was established primarily as a means by which to honor those students who have excelled academically and to foster integrity and creative performance in the understanding of world affairs.

For more information call the International Studies program office at (949) 824-8687.

Courses in International Studies

***(Schedule of Classes* designation: Intl St)**

LOWER-DIVISION

11 Global Cultures and Society (4). Offers a general overview of the rise of global interdependence in political, economic, demographic, and cultural terms. Considers what drove people from relative isolation into intensified intercourse with one another, and investigates the consequences of this shift. Same as Anthropology 41A. **(III, VIII)**

13 Global Economy (4). Acquaints students with the fundamental patterns and problems of the global economy. Emphasizes the historical roots and political implications of economic choices. Same as Economics 13. **(III, VIII)**

14 Introduction to International Relations (4). Analysis of political relations between and among nations with emphasis on explanations of conflict and cooperation. The role of ideologies and their relation to international problems are also examined. Same as Political Science 41A. **(III, VIII)**

16 Physics of Weapons and Their Control (4). Lecture, three hours. Introduction to physics related to issues of peace and conflict. Topics include: nuclear and non-nuclear weapons, delivery systems, missile defense systems, satellite surveillance systems, technology for homeland security, and arms control. Same as Physics 16. **(II)**

UPPER-DIVISION

105A Game Theory and Politics I (4). Introduction to game theory and a survey of its political applications. Examples of topics covered include voting in small committees, legislatures, and mass elections; interest group activities and environmental issues; institutional design, and the evolution of cooperative behavior. Same as Political Science 130A and Social Science 103A.

105B Game Theory and Politics II (4). More advanced game theory and its political applications, beginning where Game Theory and Politics I ends. Examples of topics covered include revolutions; arms race; spatial models of party competition; political manipulation; political coalitions and their power. Prerequisite: Economics 116 or Political Science 130A. Same as Political Science 130B and Social Science 103B.

111A Economic Development (4). Reviews the process of economic development across the globe. Topics include main theories of economic development, influence of domestic and international policies on economic development, and the effect of economic development on institutions and the environment. **(VIII)**

112A International Business (4). *Introduction to conducting business in the* international arena, decision making in the organization, and globalization of markets and production. Topics covered range from tax and finance to ethics, marketing, and more. Continuing corporate regulatory scandals discussed. Same as Social Science 115D. **(VIII)**

113A International Trade (4). Global trade as an essential element of global growth. Covers trade, balance of payments, tariffs, quotas, commercial policy, exchange rates, international financial crises, international economic institutions since WWII. Regions studied include U.S., Japan, European Union, China, India, East Asia. Same as Social Science 115H. **(VIII)**

120 Global Environmental Issues (4). While many agree that environmental problems threaten humankind, there is much disagreement over the nature of these threats and how to address them. Examines global environmental issues from various perspectives in order to provide answers to these questions. Same as Planning, Policy, and Design 136 and Political Science 143D.

121 Social Ecology of Peace (4). Examination of differing definitions of the problem of achieving peace and the special problems of seeking peace in the nuclear age. Same as Environmental Analysis and Design E113. **(VIII)**

122 Nuclear Environments (4). Understanding the impact of the nuclear age on the environment and human health through the interrelated developments of nuclear power and nuclear weapons. The early years of weapon development, catastrophic environmental pollution, perils of nuclear power in the U.S. and Russia. Same as Environmental Analysis and Design E127 and Public Health 168. **(VIII)**

123 International Environment Management (4). Network of intergovernmental organizations (the United Nations, in particular) and international nongovernmental organizations in the field of environmental management. Analysis of key international projects and sources of information. Lessons for the integration of international research expertise. Prerequisite: Criminology, Law and Society C7. Same as Planning, Policy, and Design 137 and Criminology, Law and Society C129.

130 Transnational Gangs (4). Examines the internationalization of U.S. domestic street gangs. The relationship between California gangs Mara Salvatrucha and 18th Street and Mexico/Central American gangs is assessed. Specified topics include: mobilization, migration, territorialism, culture, organization, and use of technology. Same as Social Science 120. **(VIII)**

135 California and Global Economy (4). Presents the nature of the State's economy and the current and projected role of California in the world economy. Same as Social Science 115E. **(VIII)**

151A Philosophies and World Religions (4). Examines major religious traditions that shape human cultures. A new global order is forming led by globalization of technology, trade, finance, popular culture, education, science, and medicine. What role will religion play in the future? Same as Social Science 170P. **(VIII)**

152A Non-Governmental Organization (NGO) Fundamentals (4). Introduction to non-governmental organizations, including their role in U.S. society and the international community. Explores varying definitions of NGOs and the characteristics held in common by all NGOs. Same as Social Science 152A. **(VIII)**

154 Ethics and Justice in International Affairs (4). Analyzes choices regarding the use of force, resolving conflict, and promoting human rights and social justice. Special attention is given to the American experience as a principal case study of ethics and statecraft. Prerequisites: International Studies majors only; satisfactory completion of the lower-division writing requirement.

155A International Journalism (4). Studies and critically analyzes how the media covers international issues that have reshaped American foreign coverage and the implications for Americans and U.S. foreign policy. Focuses on international reporting as a way of developing fundamental skills of journalism. Same as Social Science 184F. **(VIII)**

155B Media Writing (4). Designed to teach reporting and news writing basics. Students learn how to gather and organize information, ask effective questions, develop story ideas, research facts, and write stories on deadline. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Social Science 184G.

156A Voting and Political Manipulation (4). Introduction to social choice *and cooperative games. Topics include majority rule, types of voting meth*ods, apportionment and proportional representation, agenda manipulation, coalition formation, voting power, political consequences of electoral laws. Same as Political Science 151H and Social Science 121T.

160 Lebanese Politics (4). Explores the domestic, regional, and international dynamics that make Lebanon a challenge to its Middle Eastern neighbors. A comparison between Lebanon and other Middle Eastern countries. Same as Social Science 188J. **(VIII)**

161 Islam and the West (4). Analyzes how modernity transformed the relationship between Islam and the West, Jew and Arab, male and female in the Middle East. Analyzes the significance of globalization. Aims at presenting the debate in a way that fosters civilizational/cultural dialogue. Same as Social Science 188C. **(VIII)**

161A Political Islam (4). Political Islam is a diverse phenomenon. While noticeable barriers exist to "Islamist democracy," it is the Islamists who will define the political future of much of the Muslim world. Reviews experience of Saudi Arabia, Iran, Egypt, Pakistan, Turkey, and Indonesia. Same as Social Science 188K. **(VIII)**

162 Afghanistan (4). Examination of Afghanistan's traditional social organization, economy, political organization, and relationship among ethnic groups as a basis for discussing the consequences of domestic political turmoil and foreign interventions over the last twenty years. The country's current situation and future prospects. Same as Social Science 188I. **(VIII)**

164 The Politics of Reconstruction: Iraq (4). Examines the political history of Iraq; prospects of Iraq's economic development; effects of external interventions on Iraqi society; theoretical and practical tools to understand the politics behind reconstructing and nation-building; diverse perspectives on the reconstruction of Iraq. Same as Social Science 188L. Formerly International Studies 151. **(VIII)**

165 Introduction to Contemporary Middle East Politics (4). An overview of basic issues that shape the politics of the Middle East and North Africa. Themes include implication of the colonization era, nation-state formation, inter-Arab relations, nationalism, Arab-Israel conflict, Islamic resurgence, and more. Same as Social Science 188A. **(VIII)**

166 Psychology of the Middle East Conflict (4). Explores how emotions guide actions; political movements and social identity factors in ethnic, religious, or other group conflicts; psycho-biographies of political leaders and effects on foreign policy making; decisions to go to war; psychological dimensions of conflict and conflict resolution. Same as Social Science 188M. Formerly International Studies 153. **(VIII)**

167 Democratization in the Middle East (4). Examines underlying causes why Arab states continue to resist the spread of democracy and modernity. In this context the course examines relations between the Arab World and the West including democratization efforts, impact of colonization, oil, resources, authoritarianism and religion. Same as Social Science 188B. **(VIII)**

168 Iran: Past and Present (4). Pre-revolutionary Iran; and Iran since the revolution. History, oil and politics: domestic and international. Same as Social Science 188D. **(VIII)**

170 Israel and the World: An Introduction (4). Examines the founding of Israel, its relationship with the Arab world, the role of the international community, and the challenges it faces today. Same as Social Science 188E. **(VIII)**

171 Middle East Security (4). Examines various dilemmas and concerns such as terrorism and weapons of mass destruction. Students explore security dynamics of key actors including Iran, Iraq, Egypt, Syria, Gulf states, Israel, Palestine, and the U.S. and look at civil-military relations and internal security. Same as Social Science 188F. **(VIII)**

172 Oil Politics and Democracy in the Middle East (4). Explores the impact of oil politics on Middle East, focusing on modern history of major oil producers. Examines oil and democracy in the Middle East, oil security and American foreign policy and policy-makers' options to decrease dependence on foreign oil. Same as Social Science 188G. **(VIII)**

173 War and Peace in the Middle East (4). Discusses causes of war severity in the Middle East, implications of regional conflicts for international security. Studies and applies theories in international relations, compares policies for promoting peace through examination of sources of war and peace in the Middle East. Same as Social Science 188H. **(VIII)**

177A Latin American Populism (4). Explores and assesses Latin America's political shift to new populism and what is means for the United States. Through readings and extensive discussion, studies how this fits in Latin American history and traditions, tracing populism's roots to current political panorama Same as Social Science 172K. **(VIII)**

177B Perspectives on the U.S.–Mexican Border (4). Economic aspects of the historical development of the U.S.-Mexican border. The current economic situation in the Southwest and border areas as it affects both Mexico and the Latino/Chicano population is also examined. Same as Chicano/Latino Studies 160 and Social Science 173I. **(VII)**

177C Revolution in Latin America (4). Presents a comparative analysis of the causes, development, and consequences of selected revolutionary movements, focusing on outbreaks in Mexico, Bolivia. Cuba, Chile, Nicaragua, and Grenada. Explores topics of state formation, economic nationalism, social justice, ethnicity, and role of international affairs. Same as Social Science 173N. **(VIII)**

177D U.S. Intervention in Latin America (4). Explores the political, economic, social, and cultural ties that bind Latin America to the United States. Focuses on U.S. intervention and Latin American response from early nineteenth century to present day. Case studies include Mexico, Guatemala, Cuba, Chile, and Central America. Same as Social Science 123A. **(VIII)**

177E Cuban Society and Revolution (4). Explores the causes, development, and legacy of the 1959 Revolution. Themes include economic dependency, democracy, race, gender, culture, and the always volatile relations between Cuba and the United States. Same as Social Science 173P. **(VIII)**

177F Introduction to Cuba: History, Culture, and Society (4). Introduction to Cuban history, culture, and society using social science texts, visual and musical materials. Examines major historical moments including the historical relationship between the United States and explores evolution of Cuban music from the earliest times to present. Same as Chicano/Latino Studies 130 and Social Science 173Q. **(VIII)**

179 Regional Topics in International Studies (4). May be repeated for credit as topics vary. **(VIII)**

H180 International Studies Honors Research Seminar (4). Designed to assist students prepare a thesis prospectus for the Honors Program in International Studies. The student identifies a thesis topic, reads on the subjects of writing and research methods, orally presents and defends the prospectus, and prepares a written prospectus/literature review. Prerequisite: acceptance into the International Studies Honors Program.

183A International Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to international studies. May be taken for credit four times. Same as Humanities 183A, Social Ecology 183A, and Social Science 183A.

183E Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Anthropology 136D, Political Science 154G, and Social Science 183E. **(VIII)**

189 Special Topics in International Studies (4). May be repeated for credit as topics vary. **(VIII)**

190 Senior Thesis (4). Prerequisite: Consent of instructor. May be taken for credit twice.

199 Individual Study (2 to 4). Students participate in planned research and study under written contract with a supervising UCI instructor. Students may enroll for only one individual study course each quarter. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

Minor in Conflict Resolution

The minor in Conflict Resolution is sponsored by the International Studies program. It offers an interdisciplinary curriculum that can help students both discover and prepare themselves for any career. The course of study provides skills in conflict analysis and resolution and a useful understanding of integrative institutions at the local, regional, and international levels. Conflict plays a key role in all areas of our lives. It can have destructive or constructive potential. This program explores how conflict arises, how it is represented and discussed, how it is prevented, mitigated, managed, and used for change in interpersonal relations, within and between organizations and other kinds of groups inside nations, and in conflict between nations.

The curriculum includes training that students may apply toward State of California certification as a mediator.

As enrolled minors, students are invited to special engagements where they can interact with leading community and government officials from the U.S. and other countries, prominent scholars, and other experts in local and international conflict resolution.

Requirements for the Minor

A. Political Science 149 (Global Security and Cooperation II; offered fall quarter).

B. Political Science 154G/Anthropology 136D (Conflict Management in Cross-Cultural Perspectives; offered spring quarter).

C. Social Science 183A/Humanities 183A/Social Ecology 183A (International Studies Forum; offered each quarter). Students take this course twice, for 2 units of credit, with Pass/Not Pass grading.

D. Social Science 183B/Humanities 183B/Social Ecology 183B (Senior Seminar in Mediation; offered winter and spring quarters).

E. Social Science 183C/Humanities 183C/Social Ecology 183C (Senior Seminar in Conflict Resolution; offered fall quarter). Students take this course to satisfy the upper-division writing requirement; the course may be waived for students who take another upper-division writing course or write an honors thesis.

F. Two approved upper-division electives (may be in the student's major).

DEPARTMENT OF LINGUISTICS

5404 Social & Behavioral Sciences Gateway; (949) 824-7161
Caesar D. Sereseres, **Acting Department Chair**

Affiliated Faculty

Michael Fuller, *Associate Professor of East Asian Languages and Literatures*
Gregory Hickok, *Director of the Center for Cognitive Neuroscience and Professor of Cognitive Sciences*
Kent E. Johnson, *Associate Professor of Logic and Philosophy of Science*
Mary-Louise Kean, *Professor Emerita of Cognitive Sciences*
Glenn S. Levine, *Faculty Director of the Center for International Education, German Language Program Director, and Associate Professor of German*
Virginia A. Mann, *Professor of Cognitive Sciences*
Lisa Pearl, *Assistant Professor of Cognitive Sciences*
Robin Scarcella, *Director of the Academic English/English as a Second Language Program and Professor of Academic English and English as a Second Language, Humanities*
Armin Schwegler, *Director of Global Cultures and Professor of Spanish*
Jon Sprouse, *Assistant Professor of Cognitive Sciences*
Bernard Tranel, *Professor of Linguistics*
Mark Warschauer, *Professor of Education*
W.C. Watt, *Professor Emeritus of Cognitive Sciences*

Language is one of the most fundamental human instincts. It is an extraordinarily intricate system that all of us master as young children without special teaching, and that gives us the ability to communicate, tell stories, and express our deepest feelings. Linguistics is the scientific study of this human language. It is concerned with understanding the nature of language and our knowledge of it, how we acquire it, and how that knowledge is put to use. It is connected to many other fields of study, including psychology, anthropology, sociology, biology, physics, mathematics, computer science, philosophy, and literature.

The Department offers an undergraduate minor and undergraduate courses.

Linguistics Minor Requirements

Requirements for the minor in Linguistics are met by taking seven linguistics courses (28 units) as specified below:

A. Linguistics 3, 10, and 20.

B. Four additional linguistics courses, three of which must be upper-division.

Residence Requirement: At least three upper-division courses required for the minor must be completed successfully at UCI.

Courses in Linguistics

***(Schedule of Classes* designation: Linguis)**

LOWER-DIVISION

1 Languages of the World (4). The world has over 5,000 languages, with an exuberant variety of sounds, words, and grammars. Introduction to a representative selection (about eight), drawn from every continent. Students are not expected to learn these languages, but rather to explore them and study their structure and complexity. **(VIII)**

2 Discovering Language (4). Explores language's pervasiveness and diversity; demonstrates ways linguistics illuminates language's crucial—albeit hidden—societal role. Issues: self- and group-identification, language death, language in legal and educational settings. Illustrations: spoken and signed languages, English dialects (including Black English), American Indian languages. **(VII)**

3 Introduction to Linguistics (4). Emphasis on the notion that language is a remarkable achievement of the human mind. Current insights into the nature of language. Survey of various subfields of linguistics. Introduction to linguistic analysis. **(III** or **V)**

10 Introduction to Phonology (4). Basic concepts in phonetic description and phonological analysis. Prerequisite: Linguistics 3. **(III** or **V)**

20 Introduction to Syntax (4). Basic concepts in syntactic description and grammatical analysis. Prerequisite: Linguistics 3. **(III** or **V)**

51 Acquisition of Language (4). What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year olds. Comparison of kinds of data on which these theories are based. Same as Psychology 56L. **(III)**

68 Introduction to Language and Culture (4). Explores what the study of language can reveal about ourselves as bearers of culture. After introducing some basic concepts, examines how cultural knowledge is linguistically organized and how language might shape our perception of the world. Same as Anthropology 2D. **(III)**

99 Special Topics in Linguistics (4). Special topics at lower-division level. May be repeated for credit when topic varies.

UPPER-DIVISION

100 Grammatical Theory (4). Has both a phonology and a syntax component, and forms a bridge between lower-division course offerings and more advanced courses in phonology, syntax, and morphology. Emphasis on development of analytical skills, and evaluation of alternative proposals. Prerequisites: Linguistics 10 and 20.

101–109: COMPUTATIONAL LINGUISTICS

102 Formal Languages and Automata (4). Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability; Turing machines, random access machines, undecidable problems, NP-completeness. Prerequisites: ICS 23/CSE23 and ICS 51 with grades of C or better; Mathematics 2A-B and Statistics 67/Mathematics 67; ICS 6D/Mathematics 6D; ICS 6B/Mathematics 6B; Mathematics 6G or 3A. Same as Computer Science 162.

107M Computational Methods for Language Research (4). Focuses on computational methods useful for language research. Students become familiar with software and programming languages used for extracting information from electronic datasets and for creating basic simulations of linguistic cognition. No prior programming experience assumed. Prerequisite: Psychology 155/Linguistics 155 or Psychology 156A/Linguistics 150, or consent of instructor. Same as Psychology 157M. Concurrent with Psychology 247M.

109 Special Topics in Computational Linguistics (4). Prerequisites vary. May be repeated for credit as topics vary.

110–119: PHONETICS / PHONOLOGY

111 Intermediate Phonology (4). Fundamentals of phonological theory. Intensive practice in phonological analysis. Prerequisite: Linguistics 100 or equivalent.

112 Advanced Phonology (4). Overview of recent developments in phonological theory. Prerequisite: Linguistics 111.

114 Current Topics in Phonological Theory (4). Phonology seminar. Intensive study of a small number of current topics in phonological theory. Prerequisite: Linguistics 112. May be repeated for credit as topic varies.

119 Special Topics in Phonetics/Phonology (4). Prerequisites vary. May be repeated for credit as topic varies.

120–129: SYNTAX

121 Intermediate Syntax (4). Examines various phenomena within a generative theory of syntax, focusing on the nature of syntactic rules, representations, and constraints. Introduces methods of experimental syntax, providing students hands-on opportunity to recognize the connection(s) between theory and experiential results. Prerequisite: Linguistics 20 or consent of instructor.

122 Advanced Syntax (4). Intensive investigation of selected current topics in syntactic theory. Readings drawn from primary literature. Prerequisite: Linguistics 121.

123 Experimental Syntax (4). Examines the experimental methods that have been proposed for accessing speakers' knowledge of language in the psycholinguistic literature. Students investigate the merits of each technique through hands-on experience, culminating in a fully fledged experimental syntax study. Prerequisite: Linguistics 20. Same as Psychology 153.

124 Current Topics in Syntactic Theory (4). Research seminar in syntax. Intensive study of a small number of well-defined topics which have had significant impact on the development of syntactic theory. Prerequisite: Linguistics 122. May be repeated for credit as topic varies.

129 Special Topics in Syntax (4). Prerequisites vary. May be repeated for credit as topic varies.

130–139: MORPHOLOGY

139 Special Topics in Morphology (4). Prerequisites vary. May be repeated for credit as topic varies.

140–149: SEMANTICS

141 Topics in Philosophy of Language (4). Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts. May be repeated for credit as topics vary. Same as Philosophy 145 and Logic and Philosophy of Science 145. May be repeated for credit as topics vary.

143 Semantics (4). The role of semantics in an integrated linguistic theory. Examination of a truth theory for natural language and the role of logical form as the interface of syntax and semantics. Discussion of reference, predication, quantification, and intentionality. Readings drawn from linguistic and philosophical sources. Prerequisite: at least one of the following: Linguistics 100 or 140, Philosophy 105B, Mathematics 150, ICS 162, or consent of instructor.

149 Special Topics in Semantics (4). Prerequisites vary. May be repeated for credit as topic varies.

150–159: PSYCHOLINGUISTICS

150 Acquisition of Language II (4). Focuses on native language learning, exploring the way in which infants and very young children unconsciously uncover the rich systematic knowledge of their native language. Examines both experimental and computational studies that quantitatively investigate the "how" of language acquisition. Prerequisite: Psychology 56L or Linguistics 51 recommended. Same as Psychology 156A.

154 Theories of Second Language Acquisition (4). Research in the acquisition and learning of second and foreign languages. The influence of language acquisition theory on past and current teaching methodology. A comparison of first and second language acquisition. Prerequisite: Linguistics 3. Recommended: Linguistics 51.

155 Psychology of Language (4). Examines language using the tools of experimental psychology. From sounds to words to spoken and written sentences, explores how language is used in real time, and how its use reveals how it is represented in the mind. Same as Psychology 155.

158 Language and the Brain (4). Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 35 or N110, or consent of instructor. Same as Biological Sciences N160 and Psychology 161.

159 Special Topics in Psycholinguistics (4). Prerequisites vary. May be repeated for credit as topic varies.

160–169: LANGUAGE STUDIES

163B The Structure of English (4). An examination of American English phonology, morphology, and syntax. Useful for prospective teachers of English in elementary and secondary schools and for teachers of English as a second language. Prerequisite: Linguistics 3. Same as English 181.

164A Topics in Romance Languages (4). Prerequisites vary. May be repeated for credit as topic varies.

164B French Phonetics (4). Study of the sound structure of French. Introduction to elements of general phonetics, contrastive (French/English) phonetics, and French phonetics and phonology. Designed to help students improve their pronunciation. Also serves as a preparatory course for language teaching. Prerequisite: French 1C or equivalent or consent of instructor.

166B Indian Languages of the Americas (4). Survey of the native languages of North and/or South America, focusing on the range of sound systems, morphological processes, and syntactic structures exhibited by this diverse group of languages. Also considers the linguistic affiliations of the surveyed languages. Prerequisite: Linguistics 3.

168A Sociolinguistics (4). Examines descriptions and explanations of systematic patterns of language use in society, in particular how geographical and social factors give rise to a range of variations in a given language (dialects). Includes aspects of language change, language planning, language death. Prerequisites: Linguistics 3 and satisfactory completion of the lower-division writing requirement.

169 Special Topics in Language Studies (4). Prerequisites vary. May be repeated for credit as topic varies.

170–179: HISTORICAL LINGUISTICS

170 Historical Linguistics (4). Study of language change. Methods of historical analysis of language. Classification of languages and aspects of language change by internal reconstruction and the comparative method. Prerequisite: Linguistics 3. Recommended: Linguistics 10.

172 History of English (4). External (historical and social) and internal (linguistic) changes which have affected the English language from its Germanic roots to the present day. Prerequisite: Linguistics 3.

179 Special Topics in Historical Linguistics (4). Prerequisites vary. May be repeated for credit as topic varies.

180–189: COGNITIVE SEMIOTICS

189 Special Topics in Cognitive Semiotics (4). Prerequisites vary. May be repeated for credit as topic varies.

190–199: SPECIAL COURSES

197 Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Directed Group Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies. Students may enroll for only one 199 each quarter.

DEPARTMENT OF LOGIC AND PHILOSOPHY OF SCIENCE

779 Social Science Tower; (949) 824-1520
Jeffrey Barrett, **Department Chair**

The Department of Logic and Philosophy of Science (LPS) brings together faculty and students interested in a wide range of topics loosely grouped in the following areas: general philosophy of science; philosophy of the particular sciences; logic, foundations and philosophy of mathematics; and philosophy of mathematics in application. LPS enjoys strong cooperative relations with UCI's Department of Philosophy; in particular, the two units jointly administer a single graduate program which offers the Ph.D. in Philosophy. LPS also has strong interconnections with several science departments, including Mathematics and Physics, as well as the School of Biological Sciences, the Donald Bren School of Information and Computer Sciences, the Departments of Cognitive Sciences and Economics, and the graduate concentration in Mathematical Behavioral Sciences.

Graduate Program

Faculty

Jeffrey A. Barrett: Philosophy of science, philosophy of physics, philosophy of quantum mechanics, epistemology

Jeremy Heis: History and philosophy of mathematics and logic, early analytic philosophy

Simon Huttegger: Game and decision theory, philosophy of biology, philosophy of science

Kent Johnson: Philosophy of language, philosophy of mind
Penelope Maddy: Philosophy of mathematics, philosophy of logic, naturalism, history of analytic philosophy
David Malament: Foundations of relativity theory, philosophy of physics
Brian Skyrms: Philosophy of science, decision theory, game theory, philosophy of biology, epistemology, metaphysics
Kyle Stanford: Philosophy of science, philosophy of biology, history of modern philosophy, metaphysics
Kai F. Wehmeier: Logic, philosophy of mathematics, history of analytic philosophy
Wayne Wright: Philosophy of mind, philosophy of psychology, cognitive science

Affiliated Faculty

Wayne Aitken *(CSUSM)*: Logic, philosophy of mathematics
Francisco Ayala: Evolutionary biology, philosophy of science, philosophy of biology
Patricia Churchland *(UCSD)*: Philosophy of neuroscience and psychology
Paul Churchland *(UCSD)*: Philosophy of science, philosophy of mind, artificial intelligence and cognitive neurobiology, epistemology, and perception
Paul Eklof: Mathematical logic
Matthew Foreman: Mathematical logic
Steven Frank: Evolutionary biology
Donald Hoffman: Human and machine vision
Duncan Luce: Mathematical behavioral science
D.A. Martin *(UCLA)*: Logic, set theory, philosophy of mathematics
James McGaugh: Neurobiology of learning and memory
Yiannis Moschovakis *(UCLA)*: Set theory, recursion theory
Louis Narens: Measurement, logic, and metacognition
Riley Newman: Experimental particle physics and gravitational physics
Terence Parsons *(UCLA)*: Philosophy of language, metaphysics
Donald Saari: Mathematical economics, mathematical behavioral science, celestial mechanics
Jonas Schultz: Experimental particle physics
Norman Weinberger: Neural bases of attention and learning
Martin Zeman: Logic and combinatorics

The Department of Logic and Philosophy of Science and the Department of Philosophy jointly administer a Ph.D. program in Philosophy with two independent tracks: the Philosophy track and the LPS track. Both tracks begin from a common core of requirements in standard philosophical fields (e.g., history of philosophy, logic, ethics, metaphysics/epistemology) and branch off thereafter; both tracks offer the Ph.D. degree in Philosophy. Applicants are advised to apply to the unit whose faculty, areas of specialization, and curriculum correspond best with their interests. Students are expected to reside in the same unit as their primary advisor, but faculty in both units are available for all other academic purposes (course work, independent studies, committee membership, and more). See the Department of Philosophy in the School of Humanities for a description of the Philosophy track.

The M.A. degree in Philosophy may also be awarded to Ph.D. students who complete the necessary requirements.

ADMISSIONS

Applicants for the LPS track must have a bachelor's degree, but there is no formal requirement as to the field of that degree. The most natural undergraduate majors for LPS graduate students would be philosophy, mathematics, or the sciences, but those with other degrees who are interested in the LPS fields should feel free to apply.

Complete applications must include GRE scores, transcripts, letters of recommendation, and a writing sample. The deadline for application is January 15.

Several forms of incoming fellowships are available on a competitive basis; these include a stipend, student fees, and tuition (for out-of-state students). In subsequent years, some additional fellowship funding is available, but students in good standing are most often supported with teaching assistantships.

REQUIREMENTS OF THE LPS TRACK

All required courses must be completed with a grade of B or better.

The **History of Philosophy Requirement** provides a broad perspective. Graduate courses in three out of the following four areas—Modern Rationalism, Modern Empiricism, Kant, and Twentieth Century—must be completed by the end of the seventh quarter in residence.

The **Logic Requirement** acquaints students with the fundamentals of modern logic: elementary set theory, metalogic, effective procedures and Gödel's incompleteness theorems. LPS 205A, 205B, and 205C must be completed by the end of the seventh quarter in residence.

The **Field Requirement** provides exposure to a range of philosophical disciplines. One graduate course in moral philosophy and one graduate course in metaphysics/epistemology must be completed by the end of the seventh quarter in residence. (These courses may not also be used to satisfy the History Requirement.)

The **Philosophy of Science Requirement** provides exposure to a range of philosophy of science, from general philosophy of science to the philosophies of particular sciences (e.g., physics, biology), to the philosophies of mathematics and logic. Three selected courses from LPS 240-247 must be completed by the end of the seventh quarter in residence. (These courses may be repeated as topics vary.) Courses used to satisfy the Philosophy of Science Requirement may also be used to satisfy the History or Field Requirements.

The **Tools of Research Requirement** provides some flexibility for students with various levels of interest in pursuing the philosophy of a particular science. So, for example, a student most interested in historical issues in the philosophy of mathematics might benefit most from the study of German, while a student most interested in the philosophy of quantum mechanics should take a series of graduate courses in physics. (Students wishing to specialize further in the philosophy of a particular science might wish to pursue more demanding options; see the Mathematics and Physics emphases, below.) To satisfy this requirement, a student must pass an examination on an appropriate foreign language or receive a grade of B or better in three appropriate graduate courses in a discipline or disciplines outside philosophy by the end of the ninth quarter in residence. Though the discipline(s) here must be outside philosophy, they might be taught by Philosophy or LPS faculty. The two-hour language examination will be administered by an LPS faculty member and will require the student to translate (with the aid of a dictionary) a passage or passages from philosophical or scientific authors.

The **Portfolio Requirement** ensures that students have acquired dissertation-level skills in the writing of philosophy: e.g., the ability to isolate, understand and evaluate arguments in the philosophical literature; the ability to assimilate secondary literature; the ability to formulate and defend an original philosophical thesis. The portfolio is designed to display these skills. To satisfy this requirement, a student must submit an extended writing sample, most often consisting of several individual papers, that demonstrates the skills necessary to write a Ph.D. dissertation. (A successful portfolio typically consists of several papers totaling around 80 pages. These may be revisions of term papers. Each paper should present and defend a definite thesis and should be accessible to faculty members unfamiliar with the literature in question. The papers in the portfolio need not be of publishable quality, but they must, collectively, demonstrate the specified skills.) Portfolios will be evaluated by the entire LPS faculty. (LPS track students may request that relevant Philosophy Department faculty also be present at the evaluation meeting.) Portfolios must be submitted by the end of the fourth week of the seventh quarter.

The **Candidacy Examination** demonstrates that the student has a viable dissertation topic and an adequate grasp of related literature. To satisfy this requirement, a student must prepare and be examined on a reading list of canonical literature in the area of the dissertation and a brief (15–20 page) dissertation proposal. The reading list should in effect define the context of the proposed dissertation. The examination must be completed by the end of the tenth quarter in residence. The normative time for advancement to candidacy is 3.3 years.

Dissertation Defense. Students must pass a final oral examination focusing on the content of the dissertation administered by the Dissertation Committee. The normative time for completion of the Ph.D. is six years, and the maximum time permitted is seven years.

LPS TRACK EMPHASIS IN MATHEMATICS

In addition to the LPS track described above, students may elect to pursue the more demanding option of the Mathematics emphasis. Faculty in the UCI and UCLA Departments of Mathematics participate in the Mathematics emphasis. Students in the emphasis take courses and receive advising from these participating Mathematics professors, as well as from the faculty of LPS and the Philosophy Department. Mathematics emphasis students must satisfy the following requirement in addition to the usual LPS track requirements:

Mathematics Requirement. A student must receive a grade of B or better in six graduate courses in mathematics. (Some of these courses may also be used to satisfy the Tools of Research Requirement.)

LPS TRACK EMPHASIS IN PHYSICS

In addition to the LPS track described above, students may elect to pursue the more demanding option of the Physics emphasis. Physics emphasis students must satisfy the following requirement in addition to the usual LPS track requirements:

Physics Requirement. A student must receive a grade of B or better in three sections of LPS 241 whose topics are Philosophy of Quantum Mechanics, Geometry and Spacetime, and Probability and Determinism, as well as in three additional graduate courses in Physics or Mathematics. (Students in the Physics Emphasis may also use these courses to satisfy the Tools of Research Requirement, but not the Philosophy of Science Requirement.)

SALZBURG EXCHANGE PROGRAM

LPS and the Department of Philosophy jointly administer an Exchange Program with the University of Salzburg. The program has two parts. The Scholarly Exchange provides opportunities for faculty and graduate students in LPS and Philosophy to visit Salzburg and for faculty and graduate students from Salzburg to visit one or the other of the UCI units. The Program also sponsors joint conferences, held alternately in Irvine and in Salzburg; these are co-sponsored by Salzburg and the UCI Interdisciplinary Program in the History and Philosophy of Science.

To be eligible for the Salzburg Exchange, a graduate student must have advanced to candidacy. The selected student spends one semester in Salzburg, usually teaching one course in the general area of the thesis topic. An upper-division course may be taught in English, but lower-division courses must be taught in German. (Some previous visitors have learned serviceable German by attending a Goethe institute during the preceding summer.) Typically, a Salzburg visitor will receive a Salzburg Fellowship intended to cover travel expenses, and a stipend; those who teach while in Salzburg will also receive a salary intended to cover living expenses (including health and dental insurance).

Applications from LPS graduate students (including a curriculum vita and syllabi for courses that might be taught) should be sent to the LPS Salzburg Exchange Director by November 1.

Courses in Logic and Philosophy of Science

(Schedule of Classes **designation: LPS)**

LOWER-DIVISION

29 Critical Reasoning (4). Introduction to analysis and reasoning. The concepts of argument, premise, and conclusion, validity and invalidity, consistency and inconsistency. Identifying and assessing premises and inferences. Deductive versus inductive reasoning, and introduction to the probability calculus. Evaluating definitions. Informal fallacies. Same as Philosophy 29. **(V)**

30 Introduction to Symbolic Logic (4). An introduction to the symbolism and methods of the logic of statements, including evaluation of arguments by truth tables, the techniques of natural deduction and semantic tableaux. Same as Philosophy 30. **(V)**

31 Introduction to Inductive Logic (4). Philosophical questions concerning the foundations of scientific inference, e.g., the traditional problem of induction, the Goodman paradox, the concept of cause, Mill's method of inductive reasoning, probability calculus, different interpretations of probability, and their interaction in inductive reasoning. Prerequisite: Logic and Philosophy of Science 30 or 104. Same as Philosophy 31. **(V)**

40 The Nature of Scientific Inquiry (4). Investigates the nature, scope, and status of scientific knowledge and the methods used to acquire it. Uses concrete historical examples from a variety of scientific fields to identify distinctive features of the scientific enterprise and explore their significance. **(II)**

60 The Making of Modern Science (4). Surveys the history of science and mathematics since the Scientific Revolution, examining central developments both chronologically and thematically, as well as investigating their significance for contemporary philosophical debates about the role and status of current scientific theories. Same as History 60. **(IV)**

UPPER-DIVISION

100 Writing Philosophy (4). Discussion of those aspects of writing of special importance in philosophy, e.g., philosophical terminology, techniques for evaluating arguments, philosophical definitions and theories. At least 4,000 words of assigned composition based on philosophical readings. Prerequisites: satisfactory completion of the lower-division writing requirement; junior standing or consent of instructor. Same as Philosophy 100.

102 Introduction to the Theory of Knowledge (4). A study of one or more of the basic issues in epistemology, e.g., the role of perception in the acquisition of knowledge, the nature of evidence, the distinction between belief and knowledge, and the nature of truth and certainty. Same as Philosophy 102.

104 Introduction to Logic (4). Introduction to sentence logic, including truth tables and natural deduction; and to predicate logic, including semantics and natural deduction. Same as Philosophy 104.

105A Elementary Set Theory (4). An introduction to the basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Prerequisite: Logic and Philosophy of Science 104 or Mathematics 6B or an upper-division course in Mathematics or consent of instructor. Logic and Philosophy of Science 105A and Mathematics 151 may not both be taken for credit. Same as Philosophy 105A.

105B Metalogic (4). Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Löewenheim-Skolem theorems. Prerequisite: Logic and Philosophy of Science 105A or consent of instructor. Logic and Philosophy of Science 105B and Mathematics 150 may not both be taken for credit. Same as Philosophy 105B.

105C Undecidability and Incompleteness (4). Introduction to the formal theory of effective processes, including recursive functions, Turing machines, Church's thesis, and proofs of Göedel's incompleteness theorem for arithmetic, and Church's undecidability theorem for first-order logic. Prerequisite: Logic and Philosophy of Science 105B or consent of instructor. Logic and Philosophy of Science 105C and Mathematics 152 cannot both be taken for credit. Same as Philosophy 105C.

106 Topics in Logic (4). Selected topics in mathematical or philosophical logic. Prerequisite: Logic and Philosophy of Science 105B or consent of instructor. May be repeated for credit as topics vary. Same as Philosophy 106.

108 Topics in Induction, Probability, and Decision Theory (4). Selected topics in induction, probability, and decision theory. May be repeated for credit as topics vary. Same as Philosophy 108.

113 Topics in Modern Philosophy (4). Focuses on the works of one or more of the central philosophical figures of the modern period (e.g., Descartes, Leibniz, Hobbes, Locke, Hume, Kant) or the treatment of one or more central philosophical problems by a number of these figures. May be repeated for credit as topics vary. Same as Philosophy 113.

115 Topics in History of Analytic Philosophy (4). Review of one or more central theories or figures in the history of analytic philosophy. Emphasis is on the study of original sources, especially writings of Frege, Russell, Schlick, Carnap, and Quine. Topics include the nature of meaning and truth, the synthetic/analytic distinction, and scientific knowledge. May be repeated for credit as topics vary. Same as Philosophy 115.

120 Topics in Metaphysics (4). Examines central philosophical questions concerning our own fundamental nature and that of the world around us (e.g., causation and necessity, determination, free will, personal identity, the mind-body problem). May be repeated for credit as topics vary. Same as Philosophy 120.

121 Topics in the Theory of Knowledge (4). One or more topics in the theory of knowledge, e.g., the nature of rational justification, of perceptual knowledge, of *a priori* knowledge. May be repeated for credit as topics vary. Same as Philosophy 121.

140 Topics in Philosophy of Science (4). Selected topics in contemporary philosophy of science, e.g., the status of theoretical entities, the confirmation of theories, the nature of scientific explanation. May be repeated for credit as topics vary. Same as Philosophy 140.

140A-B Science and Religion I, II (4-4). The development of genomics, stem-cell research, robotics, nanotechnology, and neuropharmacology raises difficult religious and philosophical questions. Examines interdisciplinary approaches that cut across institutional boundaries, cultural borders, and religious traditions. **140A:** Focuses on the relationship between religion and biological sciences. **140B:** Focuses on the relationship between religion and cognitive/affective/social neuroscience. Same as Social Science 130A-B.

141A Topics in Philosophy of Physics (4). Selected topics in the philosophy of physics, e.g., the interpretation of quantum mechanics, the nature of space-time, the problem of quantum field theories. May be repeated for credit as topics vary. Same as Philosophy 141A.

141B Geometry and Spacetime (4). An examination of the foundations of the special theory of relativity, with emphasis on the geometry of Minkowski spacetime, and its relation to both Euclidean and non-Euclidean (hyperbolic) plane geometries. Prerequisites: multivariable calculus and linear algebra at the undergraduate level. Same as Philosophy 141B.

141C Philosophy of Quantum Mechanics (4). An examination of the standard von Neumann-Dirac formulation of quantum mechanics. The quantum measurement problem is discussed along with several proposed solutions, including GRW, many-worlds, man-minds, and Bohm's theory. Same as Philosophy 141C.

141D Probability and Determinism (4). An examination of a cluster of interrelated issues concerning probability, determinism, logic, and the foundations of quantum mechanics. Prerequisites: multivariable calculus and linear algebra at the undergraduate level. Same as Philosophy 141D.

142 Writing/Philosophy of Biology (4). Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Course work includes one 4,000-word and four 1,000-word papers. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Biological Sciences E142 and Philosophy 142.

143 Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary. Same as Philosophy 143 and Psychology 123P.

144 Topics in Philosophy of Social Science (4). Selected topics in the philosophy of the social sciences, e.g., is their goal to understand behavior or to predict and control it?; are they normative and the natural sciences not?; do they incorporate philosophical doctrines about language and mind? May be repeated for credit as topics vary. Same as Philosophy 144.

145 Topics in Philosophy of Language (4). Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts. May be repeated for credit as topics vary. Same as Linguistics 141 and Philosophy 145. May be repeated for credit as topics vary.

146 Topics in Philosophy of Logic (4). Selected topics in the philosophy of logic, e.g., the nature of logical truth and our knowledge of it, the status of propositions, definite descriptions, and existential presuppositions. May be repeated for credit as topics vary. Same as Philosophy 146.

147 Topics in Philosophy of Mathematics (4). Selected historical and contemporary topics in the philosophy of mathematics, e.g., mathematical truth and ontology, mathematical knowledge, the nature and role of proof, the workings of mathematics in application. May be repeated for credit as topics vary. Same as Philosophy 147.

199 Independent Study (1 to 4). Investigation of special topics. May be taken for credit for a total of 12 units.

GRADUATE

200 Topics in Logic and Philosophy of Science (4). May be repeated for credit as topics vary.

205A Set Theory (4). The basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Same as Philosophy 205A.

205B Metalogic (4). Formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Loewenheim-Skolem theorems. Prerequisite: Logic and Philosophy of Science 205A. Same as Philosophy 205B.

205C Undecidability and Incompleteness (4). Formal theory of effective processes, including recursive function, Turing machines, Church's thesis, and proofs of Goedel's incompleteness theorem for arithmetic, and Church's undecidability for first-order logic. Prerequisite: Logic and Philosophy of Science 205B. Same as Philosophy 205C.

206 Topics in Logic (4). May be repeated for credit as topics vary. Same as Philosophy 206.

213 Topics in Modern Philosophy (4). May be repeated for credit as topics vary. Same as Philosophy 213.

215 Topics in Analytic Philosophy (4). May be repeated for credit as topics vary. Same as Philosophy 215.

220 Topics in Metaphysics (4). May be repeated for credit as topics vary. Same as Philosophy 220.

221 Topics in Epistemology (4). May be repeated for credit as topics vary. Same as Philosophy 221.

232 Topics in Political and Social Philosophy (4). Same as Philosophy 232.

240 Topics in Philosophy of Science (4). May be repeated for credit as topics vary. Same as Philosophy 240.

241 Topics in Philosophy of Physics (4). May be repeated for credit as topics vary. Same as Philosophy 241.

242 Topics in Philosophy of Biology (4). May be repeated for credit as topics vary. Same as Philosophy 242.

243 Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary. Same as Philosophy 243 and Psychology 231P.

244 Topics in Philosophy of Social Science (4). May be repeated for credit as topics vary. Same as Philosophy 244.

245 Topics in Philosophy of Language (4). May be repeated for credit as topics vary. Same as Linguistics 241 and Philosophy 245.

246 Topics in Philosophy of Logic (4). May be repeated for credit as topics vary. Same as Philosophy 246.

247 Topics in Philosophy of Mathematics (4). May be repeated for credit as topics vary. Same as Philosophy 247.

289 Logic and Philosophy of Science Workshop (1 to 4). A two- or three-quarter-long workshop on selected topics in logic and philosophy of science. In-progress grading, Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary. Same as Philosophy 249.

298 Independent Study (4 to 12). May be repeated for credit for a total of 12 units.

299 Directed Research (1 to 12). May be repeated for credit as topics vary.

399 University Teaching (4 to 12). May be repeated for credit for a total of 12 units.

DEPARTMENT OF POLITICAL SCIENCE

5229 Social Science Plaza B; (949) 824-5361
Mark P. Petracca, **Department Chair**

Undergraduate Program

The Department of Political Science offers a wide variety of courses at the introductory, lower-division, and more specialized upper-division levels. Courses in both micropolitics (individual and group politics) and macropolitics (politics at the state and international levels) are offered. The curriculum is organized into five areas: American politics and society, political theory, international relations, comparative politics, and public law. The Department also offers an Honors Program in Political Science for juniors and seniors, culminating in a senior honors thesis.

The Department is composed of a strong and diverse faculty especially interested in analyzing central questions of political science related to such topics as policy-making, political structures, participation, conflict, change and development, power and authority, and interstate relations. The faculty has particular strength in interdisciplinary approaches, in comparative analysis, and in the application of quantitative data to political science issues.

REQUIREMENTS FOR THE B.A. DEGREE IN POLITICAL SCIENCE

University Requirements: See pages 55–62.

School Requirements: See page 460.

Departmental Requirements for the Major

School requirements must be met and must include 11 courses (44 units) as specified below:

I. Five lower-division (one or two digit) Political Science courses selected as indicated either in option A or option B. Students are encouraged to take most of these courses during their first two years as a Political Science major at UCI.

   Option A: Political Science 6A, 6B, and 6C (12 units), plus the lower-division introductory course (4 units) for the module selected under II below, plus any one additional lower-division course in Political Science (4 units).

   Option B: Three lower-division courses (12 units) selected from Political Science 21A, 31A, 41A, 51A, and 61A, plus any two additional lower-division Political Science courses (8 units). One of these five courses must be the lower-division introductory course for the module selected under II below.

II. Six upper-division courses in Political Science (24 units) chosen from among the Political Science modules numbered 120–179. Three of these courses must be from one module.

Honors Program in Political Science

The Honors Program in Political Science is open to all junior and senior Political Science majors who meet the minimum academic qualifications (3.5 GPA in Political Science courses and 3.2 GPA overall). In addition to satisfying the requirements for the major in Political Science, Honors Program participants must complete additional course work as specified below.

During the year prior to the year in which the thesis will be written, a prospective Honors Program student should identify a Department of Political Science faculty member who is willing to supervise the student's thesis. Students are ordinarily expected to take an upper-division Political Science course or a Political Science 199 Independent Study course with the advisor prior to their senior year. Students must also prepare a written proposal for their senior thesis. Proposals are approved by the faculty advisor and filed with the Department and Undergraduate Counseling offices.

During their senior year, students must enroll in the Honors Thesis Workshop (Political Science H182A, offered during the fall quarter), and three quarters of the Senior Thesis course (Political Science 190). Students write their senior thesis, which is designed and completed under their faculty advisor's supervision. Upon successful completion of their senior thesis, students graduate with Honors in Political Science and their transcripts note that they were in the Honors Program in Political Science.

Public Affairs Internship Program

The Public Affairs Internship Program, sponsored by the Department of Political Science, is designed to provide Political Science and other students with professional experience in the fields of government, nongovernmental organizations, the media, law, business, consulting, and others. The program is open to all sophomores, juniors, and seniors.

This program provides a selection of internship opportunities open to students by intern-sponsors, as available. Students also may create their own internship opportunities, consistent with Departmental guidelines. Students are required to enroll in Political Science 183 during the quarter of their internship. This course, supervised by the internship coordinator and participating members of the faculty, is offered Pass/Not Pass and cannot be used to satisfy upper-division Political Science requirements.

Information and applications are available in the Department office.

Political Science Minor Requirements

Requirements for the minor in Political Science are met by taking seven political science courses (28 units) as specified below:

A. One course selected from Political Science 6A, 6B, or 6C.

B. Three upper-division political science courses, chosen from one Political Science module.

C. Three additional courses in political science, chosen from those numbered Political Science 6A, 6B, 6C, 20–79, or 120–179.

Graduate Program

Participating Faculty

Deborah D. Avant: International relations, comparative politics, international law and organizations, history and politics, international security
Matthew N. Beckmann: American political institutions, the Presidency, Congress, interest groups, and survey research methodology
Daniel R. Brunstetter: Political theory, international relations, French political thought
Alison Brysk: International relations, Latin American politics, human rights
Erwin Chemerinsky: Constitutional law, federal practice, civil rights and civil liberties, appellate litigation
Russell J. Dalton: West European politics, mass political behavior
James Danziger: Urban political systems, public policy analysis, and technology and politics
Louis DeSipio: American politics, ethnic politics, Latino politics and public policy
David Easton: Political systems, political structures
David L. Feldman: Law and policy, environmental and energy policy, ethics, philosophy, and public policy, comparative public policy, water resources management

Martha Feldman: Organization theory, organizational change, decision making, public management, qualitative research methods
Mark J. Fisher: Law and medicine
Sara B. Goodman: Comparative politics, immigration, integration, and citizenship policies in European Union and North America
Bernard Grofman: Mathematical models of collective decision making, formal democratic theory, sequential decision making, and politics of small groups
Helen Ingram: Public policy, U.S.–Mexico relations, American politics
Marek Kaminski: Institutions of democracy, game theory, methodology, and statistics
Diana Kapiszewski: Public law, comparative politics, area studies (Latin America), methodology
Claire Jean Kim: Racial and ethnic politics, protest and social movements, contemporary political theory
Cecelia Lynch: International relations, peace politics, and international law
Richard Matthew: International politics, environmental policy
Anthony McGann: Formal modeling of political systems, comparative political economy, West European politics
David S. Meyer: Social movements, public policy, peace and war, social justice
Kristen R. Monroe: Political economy, rationality, American politics, methodology
Patrick Morgan: National security policy, American foreign policy, international politics, U.S.–European relations, Soviet politics
Kevin Olson: Political theory, history of political thought, legal theory, philosophy of the social sciences
Jack W. Peltason: Constitutional law and civil liberties
Mark P. Petracca: American political institutions (presidency and congress), interest organizations, public policy, power and political discourse
Shawn Rosenberg: Political psychology, cognitive psychology, public opinion
Kamal Sadiq: Comparative politics, immigration in developing countries, India and South East Asia, Asian security
Wayne Sandholtz: International political economy, European community
William Schonfeld: Authority, democratic theory, and comparative politics
Caesar D. Sereseres: U.S. foreign policy, U.S.–Latin American relations, Mexican-American politics
Charles (Tony) Smith: Public law and courts, international law and organizations, constitutional law and theory, federalism and intergovernmental relations
Etel Solingen: International relations theory, international political economy, and world politics
Dorothy J. Solinger: Chinese domestic politics and political economy, comparative politics, East Asian politics, and democratization
Rein Taagepera: Mathematical models and quantitative analysis of elections, inequality, arms races, growth-decline phenomena and Baltic area studies
Katherine Tate: African American and minority politics, voting behavior, public opinion and American elections, state and urban politics
Keith L. Topper: Political theory
Rodolfo D. Torres: Urban politics, the State and class structures, studies in racism and inequality, poverty and social policy
Yuliya V. Tverdova: Comparative politics, methodology
Carole J. Uhlaner: Comparative political participation, formal models of political behavior
Robert Uriu: International relations, international political economy, Japanese political economy
Martin Wattenberg: American political behavior and institutions

The Department of Political Science offers a Ph.D. degree program in Political Science. The Department has attained a reputation for producing the very best innovative and interdisciplinary scholarship. Faculty are engaged in the study of such key questions as the politics of advanced and democratizing societies, international cooperation and peace, the politics of racial and ethnic minority groups, and the origins of altruism and morality and their impact on world politics.

Graduate students can pursue concentrations in public choice and political psychology and specializations in democracy studies, international relations, and race and minority politics. The Ph.D. program offers big payoffs to graduate students, in fact, because of the extended range of inquiry an interdisciplinary program affords.

Political Science faculty members are regular participants in and help direct several research units on campus. The Center for the Study of Democracy, an Organized Research Unit at UCI, sponsors research and education aimed at improving the democratic process in the United States and expanding democracy around the world. The UCI Interdisciplinary Center for the Scientific Study of Ethics and Morality explores questions concerning the origins and causes of morality. The Center for Global Peace and Conflict Studies (CGPACS), housed in the School of Social Sciences, is a multidisciplinary program dedicated to promoting scholarly, student, and public understanding of international conflict and cooperation. The Institute for Mathematical Behavioral Sciences, also located in the School of Social Sciences, offers opportunities for participation in ongoing faculty research, notably with faculty members engaged in fields of public choice and political economy.

ADMISSIONS

The deadline for application for fall quarter admission is January 15. Students are admitted for winter or spring quarters only under exceptional circumstances. Additional information is available in the general section on admission to Social Science graduate programs. Please note especially the required examinations.

REQUIREMENTS

First-year students must take a core program of graduate seminars, focusing on major substantive areas as well as research methods. Students are required to complete one year of statistics, preferably before enrollment but no later than their first year. Competence in a foreign language is required. Students may substitute mastery of an advanced research skill in place of a foreign language. To acquire such a skill (which could involve course work in such disciplines as economics, mathematics and computer science, or statistics), students could take courses in econometrics, advanced multivariate regression, or computer science. Attendance in a colloquium series also is required for all graduate students during their first two years in residence.

Reviews and Examinations

Students ordinarily are expected to maintain a grade point average of 3.5 or better. At the completion of the first year, a review of performance in the graduate program will be conducted for each student by the Political Science faculty.

A set of three papers, normally completed by the third year of study, tests the student's competence in a set of major domains for intellectual inquiry. These domains are determined by the student and the Political Science Graduate Director. Upon successful completion of these papers and demonstration of competence in mathematics and a foreign language or an advanced research skill, a candidacy committee is appointed to oversee the qualifying examination and the formal advancement to candidacy. Students are expected to advance to candidacy by the ninth quarter of graduate study.

After the student advances to candidacy, the doctoral committee, usually composed of three members of the candidacy committee, reviews a dissertation prospectus and supervises work toward completion of the dissertation. Within six months of the oral qualifying examination (the formal advancement to candidacy), students are expected to meet with their doctoral committee, in order to discuss with the members a dissertation prospectus.

The normative time for completion of the Ph.D. is six years, and the maximum time permitted is seven years.

Concentration in Public Choice

Public Choice is an interdisciplinary field, at the intersection of political science and economics, which draws on sophisticated quantitative tools to model the functioning of political institutions.

Public Choice examines such areas as theories of voter and party choice; the theory of constitutions; the theory of committees and elections; models of regulation; problems of public goods and externalities; rent-seeking models; and issues in social choice, social welfare, and demand revelation.

This concentration is administered by an interdisciplinary committee of faculty from the Departments of Political Science and Economics. Students who elect this concentration are admitted under the normal procedures for the program in Political Science and must fulfill all the requirements for the Political Science degree, with the following modifications:

(1) Students must complete the three-quarter core sequence in Public Choice, which is taught jointly by Political Science and Economics faculty. This sequence is usually taken in the student's second or third year.

(2) Students must complete three additional graduate-level, four-unit courses in related fields with the consent of their graduate advisor, chosen from a set of courses designated by the interdisciplinary committee. The courses chosen are to be tailored to the individual interests and academic background of the student and usually will include at least two Economics courses (such as Econometrics, Game Theory, and Law and Economics) and one Political Science course (such as those on electoral systems, party systems, constitutions, courts).

(3) Students are expected to write their dissertation on a topic related to Public Choice. Usually the dissertation advisor will be a Political Science member of the interdisciplinary committee.

Concentration in Political Psychology

The last two decades have seen an explosion of interest in the field of political psychology. UCI's graduate concentration is part of this development, but enjoys a rather distinctive place. The concentration offers students a broader education than is typically available at other institutions. In this vein, the program aims to provide (1) a strong background in both political science and psychology; (2) an emphasis on theoretical and conceptual issues as well as empirical and methodological ones; and (3) a familiarity with research being done outside of the United States as well as within it. In this context, a number of research concerns central to the participating faculty are considered, including social change and democratization, ideology, altruism, social and political identity, public policy, community building, mass media effects, voting behavior, and international integration. Believing in academic community, the concentration's sponsoring faculty offer a host of activities including colloquia, reading groups, and joint research opportunities to facilitate contact between students and faculty and among the students themselves.

Requirements. The purpose of the concentration is to provide a course of study which supplements the Ph.D. degree in Political Science. Therefore, students are required to complete all degree requirements for the Ph.D. stipulated by the Department of Political Science. As part of or in addition to these requirements, students must take five courses: Introduction to Political Psychology I and II (Political Science 285A and 285B), and three graduate psychology courses which provide a strong background in psychology (selected from an approved group which includes courses such as Personality in Development, Society and Pathology, Personality Assessment, Proseminar in Cognitive Science, and Human Information Processing). These courses are taught in the Department of Cognitive Science in the School of Social Sciences and the Department of Psychology and Social Behavior in the School of Social Ecology.

Courses in Political Science

(Schedule of Classes **designation: Pol Sci)**

LOWER-DIVISION

6 Introduction to Political Science. Basic introduction to politics and society. These courses can be taken in any order.

6A Introduction to Political Science: Political Analysis (4). Presents various modes of understanding politics. Emphasis on basic approaches to political analysis, their uses in constructing theories, and their application to particular national political systems. **(III, VIII)**

***6B Introduction to Political Science: Macropolitics* (4).** *Introduction to* political inquiry at the level of the nation-state. Addresses the questions: how do we account for the emergence of a world system of nation-states; how does the course of political development affect the distribution of political power within nation-states; what is the evolutionary linkage between liberal democracies and the transformation of capitalism; what are the major challenges to political governance facing western democracies. **(III)**

6C Introduction to Political Science: Micropolitics (4). Introduction to political behavior of individuals and groups within national systems. Three major questions are addressed: How do individuals come to understand the political world? How do individuals behave within this world? How do groups and individuals engage in the political process? **(III)**

10A Probability and Statistics in Political Science I (4). Introduction to the variety of statistical applications in the social sciences. Descriptive statistics. Measures of central tendency and dispersion. Percentile ranks. Standardization and normal approximation. Basic probability theory focuses on application to statistical inference and binomial distribution. Laboratory required. Prerequisites: Social Science 3A; lower-division standing or consent of instructor. Students who receive credit for Political Science 10A may not receive credit for Anthropology 10A, Psychology 10A, Social Ecology 13, Social Science 9A, Social Science 10A, or Sociology 10A. **(V)**

10B Probability and Statistics in Political Science II (4). Introduction to statistical inference, sampling distribution, standard error. Hypothesis tests for proportions and means. Inferential techniques for nominal variables including chi-square, study measures of strengths, significance of relationships between variables, assumptions, data requirements, and types of error in significance tests. Prerequisite: Political Science 10A or equivalent. Students who receive credit for Political Science 10B may not receive credit for Anthropology 10B, Psychology 10B, Social Ecology 13, Social Science 9B, Social Science 10B, or Sociology 10B. **(V)**

10C Probability and Statistics in Political Science III (4). Focus on correlation, regression, and control for effects of variables. One-way and two-way factorial analysis of variance. *A priori* and *a posteriori* comparisons. Introduction to repeated measures design and on-parametric statistics. Discusses use of statistics in newspapers and popular magazines. Prerequisite: Political Science 10B or equivalent. Students who receive credit for Political Science 10C may not receive credit for Anthropology 10C, Psychology 10C, Social Ecology 13, Social Science 9C, Social Science 10C, or Sociology 10C. **(V)**

21A Introduction to American Government (4). Introduction to American political processes and institutions. Topics include elections, political participation, parties, interest groups, the Presidency, Congress, the bureaucracy, and the judiciary. **(III)**

29 Special Topics in American Politics (4). May be repeated for credit as topics vary.

31A Introduction to Political Theory (4). Types of questions: What is politics? What are the theoretical and philosophical bases for different types of political arrangements? How do these perspectives get translated into reality? Among others, the works of Rousseau, Locke, Mill, and Marx are read. **(III)**

39 Lower-Division Special Topics in Political Theory (4). May be repeated for credit as topics vary.

41A Introduction to International Relations (4). Analysis of political relations between and among nations with emphasis on explanations of conflict and cooperation. The role of ideologies and their relation to international problems are also examined. Same as International Studies 14. **(III, VIII)**

42A Nuclear Arms and Global Conflicts (4). Introduction to the history, technical basis, military capacity, and political conceptions and perceptions that bear on the global nuclear arms race. Topics include how weapons work and are delivered, theories of deterrence, arms race models, prospects for arms control and disarmament. **(VIII)**

43D Global Security and Cooperation (4). Examination of global conflict and cooperation since World War II, and future prospects. The Cold War, nuclear arms race, regional conflicts, arms proliferation and control, deterrence theory, psychology of conflict, governmental and nongovernmental efforts to promote global peace and cooperation. **(VIII)**

44A Global Issues and Institutions (4). Surveys recent developments in the nature of global interdependence. Examines the major political, economic, and military conflicts of this century and recent problems of population growth, environmental decay, ethnic/national antagonism and violence, and post-Cold War politics. **(III, VIII)**

49 Lower-Division Special Topics in International Relations (4). May be repeated for credit as topics vary.

51A Introduction to Comparative Politics (4). Presents various analytical methods used to compare political systems. Emphasis on examination of theories and research with national political systems as units of analysis. Understanding how it is possible to compare political units and make meaningful statements about them. **(III)**

59 Lower-Division Special Topics in Comparative Politics (4). May be repeated for credit as topics vary.

61A Introduction to Race and Ethnicity in Political Science (4). Examines major theories that attempt to explain the roles of race and ethnicity in U.S. politics, while also looking at the political attitudes and behaviors of ethnic and racial populations in order to measure their contemporary political influence. Same as Chicano/Latino Studies 64. **(III, VII)**

69 Lower-Division Special Topics in Minority Politics (4). May be repeated for credit as topics vary.

71A Introduction to Law (4). An introduction to the study of judicial politics. Questions include: what is law?; what is a court?; who are the judges? Analysis of a wide range of judicial decisions illustrates the political importance of courts in the U.S. and elsewhere. **(III)**

79 Lower-Division Special Topics in Law (4). May be repeated for credit as topics vary.

UPPER-DIVISION

120–129: AMERICAN POLITICS AND GOVERNMENT

120 Public Opinion (4). This writing course introduces students to theories concerning sources of public opinion, processes by which it is altered, organization of citizens' belief systems, and role of public opinion in government policy. Students analyze survey data as a research project. Prerequisite: satisfactory completion of the lower-division writing requirement.

121A The American Presidency (4). Presents a comprehensive survey of the American presidency and considers the question of political power.

121B Mass Media and the Nomination Process (4). Examines changes in the presidential nomination process over the last four decades as well as the role of the media in this process. Students do a research paper comparing the media's coverage of two nomination races in different historical eras.

121C U.S. Elections and Voting Behavior (4). Examines how voters evaluate political parties, candidates, and issues in electoral campaigns to reach their decisions. Numerous controversies concerning the degree of issue voting, sophistication of candidate evaluations, and the decline of political parties are discussed.

121E Public Policy Analysis (4). Examines different approaches to the analysis of public policy with differing notions of what constitutes good policy, the role of government, and how citizens participate in policy-making. Suggests a policy-design perspective which builds upon other frameworks but concentrates on goals, implementation structures, tools, and rationales. Prerequisites: Environmental Analysis and Design E8 or Planning, Policy, and Design 4, and Planning, Policy, and Design 166. Same as Planning, Policy, and Design 169.

121F Presidents Since World War II (4). Reviews the actions and character of presidents from Harry Truman through Bill Clinton. Each week a different president is examined from a variety of perspectives. Students are expected to write a substantial original research paper. Prerequisite: Political Science 21A.

122A American Metropolitan Politics (4). An analysis of the politics of urban and suburban cities. Main themes include alternative explanations of how political power is exercised and how policy decisions are made for urban governments; the structure of local political systems, including the problems of metropolitanism and federalism; the major policy problems facing the urban area, particularly from the perspective of the "underclass."

122B California Politics (4). Explores California state politics in comparison to other states in such dimensions as: nature of electoral competition, state constitutions, lobbying patterns, gubernatorial leadership, scope and innovativeness of major policies, relationship of politics and policies to differing electoral orientations and economic conditions.

122C The American Electorate (4). Provides an overview of how polls are conducted, and how they can be manipulated by question wording, sampling techniques, interviewing procedures, and context. Public attitudes toward Congress are examined, and students analyze survey data on their own as a research project.

123A Parties and Political Organizations (4). A consideration of the role that parties and other political organizations play in the American political process. Also looks at the development and significance of PACs, interest groups, and social movements as vehicles for democratic participation.

123B Representation and Redistricting (4). Deals with classical theories of representation: issues of racial and political representation in U.S. legislatures and city councils; proportional representation models and comparative election systems. Prerequisite: Political Science 21A.

123C Reforming American Politics (4). Assesses the demands and prospects for political reform in America. Where is political reform most needed? Why? What form shall it take? Focuses specifically on ethics of public decision-making, professionalization of American politics, institutional designs for democratic governance.

124A The Politics of Protest in the U.S. (4). Examines the Civil Rights movement, the Black Power movement, and the women's movement in light of existing social movement theories. The theories are used to illuminate the three cases, and the cases are used to critique and revise the theories. **(VII)**

124B Latinos in U.S. Politics (4). Comparing the political issues facing Latino groups by examining their migration histories, voting behavior, non-electoral participation, and policy issues. Latino issues are examined on the national, state, and local levels, including formal representation, immigration, affirmative action, and language policy. Same Chicano/Latino Studies 151. **(VII)**

124C Comparative Minority Politics (4). Examines the political experiences of Blacks, Latinos, and Asian Americans in the United States from roughly 1950 to the present. Focuses on how each group has pursued political empowerment via both conventional political channels and social movements. Same as African American Studies 151, Asian American Studies 132, and Chicano/Latino Studies 147. **(VII)**

124D Race and Citizenship in America (4). The role U.S. citizenship policy has played in the social construction of race. Looks comparatively at citizenship experiences of different racial/ethnic groups to understand how the meaning of being a U.S. "citizen" has varied over time and across groups. Same as Chicano/Latino Studies 152. **(VII)**

124E African American Politics (4). Examines the politics of African Americans in order to gain a broader perspective of the American political process. Major developments in African American politics (including the civil rights movement, Black presidential bids), continuing problem of racism, responsiveness of key governing institutions. Same as African American Studies 152.

125A The United States Congress (4). Does the Congress do a good job of representing the American citizenry? Is it the most appropriate mechanism for the creation, resolution, and implementation of public policy? Prerequisite: satisfactory completion of the lower-division writing requirement.

125B Congress: The New Institutionalist Approach (4). Study of the U.S. Congress emphasizing how rules and institutions (filibuster, veto, the committee system, party caucuses) structure how the Congressional game is played. Combines theoretical study of procedures with the practical study of actual bills.

126A Mexican-Americans and Politics (4). Examines political development of Mexican-Americans. Topics include their "territorial" roots in the Southwest, demographics, political leadership and organization; policy issues of immigration, bilingualism, education, and economics; relations with other minority groups; the role of Mexican-Americans in U.S.–Mexico relations. Same as Chicano/Latino Studies 143. **(VII)**

126B Urban Policy Analysis (4). Problem-solving seminar examining key issues for urban political systems and the metropolitan area. Evaluation of the nature, quality, and feasibility of alternative analyses of a series of policy problems, such as housing, poverty/welfare policy, transportation, crime, education. Prerequisite: consent of instructor.

126C U.S. Immigration Policy (4). Examines selected immigration policy debates since the nineteenth century, rationale and consequences of immigration law since 1965, problems of administration, implementation and enforcement, impact of immigration policy on foreign relations, and contemporary debate regarding the future of U.S. policy. Same as Chicano/Latino Studies 163. **(VII)**

126D Urban Politics and Policy (4). Examines the economic limits of cities and welfare policy. Addresses such issues as why are the poor concentrated in the central cities? Which anti-poverty programs will work best in the cities? Which level of government is best able to combat poverty in the U.S.?

126F Politics of Animal Rights (4). Examines animal rights/welfare movement's efforts to transform moral, practical, and legal standing of nonhuman animals in contemporary U.S. Topics include philosophical debates about the moral status of animals; current knowledge about animal minds and emotions; factory farming; ethics of vegetarianism/veganism.

127A-B-C Public Economics I, II, III (4-4-4). 127A: Examines the role of government expenditure in the economy from both a theoretical and an empirical perspective, with a focus on two broad categories of government expenditures policies: social insurance and redistribution programs. Analysis of taxation. **127B:** Theory of public goods, externalities, voting models, analysis of bureaucracy, the Tiebout model, income redistribution, intergovernmental grants. **127C:** Allows students to apply knowledge of public economics in the conduct of individual research. Prerequisites: Economics 100A-B or 105A or consent of instructor. For 127C: satisfactory completion of the lower-division writing requirement. Same as Economics 141A-B-C.

129 Special Topics in American Politics and Society (4). May be repeated for credit as topic varies.

130–139: POLITICAL THEORY AND METHODS

130A Game Theory and Politics I (4). Introduction to game theory and a survey of its political applications. Examples of topics covered include voting in small committees, legislatures, and mass elections; interest group activities and environmental issues; institutional design, and the evolution of cooperative behavior. Same as International Studies 105A and Social Science 103A.

130B Game Theory and Politics II (4). More advanced game theory and its political applications, beginning where Game Theory and Politics I ends. Examples of topics covered include revolutions; arms race; spatial models of party competition; political manipulation; political coalitions and their power. Prerequisite: Political Science 130A or Economics 116. Same as International Studies 105B and Social Science 103B.

131A Political Thought Since Hobbes (4). Classic statements of political values from Hobbes to the present: classical liberalism, conservatism, radical democracy, liberal democracy, socialism, pluralism, Marxism, fascism, neoconservatism. Emphasis on underlying views of human nature and history. Prerequisite: upper-division standing or consent of instructor.

131D Nietzsche (4). The social, economic, and political philosophy of Nietzsche. Nietzsche's seminal ideas about knowledge and language and how these ideas have influenced contemporary thinking concerning these subjects. Prerequisite: satisfactory completion of the lower-division writing requirement.

132A Critical Political Theory (4). Acquaints students with current political theories, critical of conventional thinking, which attempt to join political, economic, social, historical, linguistic, and philosophical concerns to questions involving the relationships between and among individuals, groups, and institutions in the society, economy, and polity. Prerequisites: upper-division standing and satisfactory completion of the lower-division writing requirement. Same as Sociology 126.

133D Analytic Political Research (4). Encourages students to think creatively and analytically about politics by applying mathematical techniques as a means to increase understanding. Introduces the use of both static and dynamic mathematical models on such political topics as elections, revolution, and arms races.

134A Democratic Theory and Liberalism (4). A modern approach to democratic theory including social choice and empirical democratic theory. Addresses issues such as how institutions can be democratic, how minorities can be protected, how rights can be balanced against obligations, and how democracy can promote deliberation.

134B Modern Political Theory (4). Focuses on a different aspect of modern political theory each quarter.

134F Social and Political Theory (4). Focus is on recent major work in social and political theory. An in-depth analysis of a relatively small body of writing. Authors discussed include Jurgen Habermas, Anthony Giddens, and Richard Rorty.

134H Language and Power (4). Seminar to study a theory of how reality/meaning/knowledge is created in language as a consequence of structures of power. Prerequisites: upper-division standing and satisfactory completion of the lower-division writing requirement; strongly recommended: 3.5 GPA and/or background in modern language analysis.

134J Sexism and Power (4). Sexism may be seen as a particular form of socially constructed power which creates and maintains gender differences as relations and practices of structured inequalities. Males and females are objects constructed in a powered language dominated and controlled by males to their positional and distributional advantage. Prerequisites: upper-division standing and satisfactory completion of the lower-division writing requirement. Same as Sociology 168.

135A Origins of Liberalism (4). Examines the ideals, social forces, and historical events that gave rise to liberal political theory. Topics include patriarchal authority, the divine right of kings, religious toleration, slavery, colonialism, political economy, the evolution of law, and tensions between liberty and equality. Prerequisite: Political Science 6B or 6C or 31A, or consent of instructor.

137A Politics and Human Nature (4). Addresses the central debate between positive social science and normative political theory: is there an intrinsic human nature? If so, what is it? What is its origin? And how much cultural variation does it display? Prerequisite: satisfactory completion of the lower-division writing requirement.

137B Types of Political Representation (4). Political representation plays an important role in democratic systems, but is elusive once examined closely. Students delve into the concept and relate different views to political life. Half of the course is spent on writing instruction. Prerequisite: satisfactory completion of the lower-division writing requirement. Recommended for upper-division students.

137C Political Psychology (4). Examination of how psychological theory and research may be used to better understand political thought and behavior. Drawing on theories of learning, cognition, and personality, discusses the formation of political attitudes, the process of political decision-making, the nature of political leadership. Formerly Political Science 128A. Same as Psychology 176A.

138B Ethics and Public and Private Life: Advanced Seminar (4). Examines ethical issues in public and private life by considering traditional moral theory in light of specific moral dilemmas, such as environmental policy, genocide, abortion, euthanasia, social welfare, and aid to other countries. Prerequisite: satisfactory completion of the upper-division writing requirement or consent of instructor. Same as Planning, Policy, and Design 168.

138C Ethics of Difference (4). Examines differences traditionally judged politically salient—race, ethnicity, religion, gender. Personal interviews with an elderly person encourage students to understand the social construction of difference and to reexamine their own attitudes by putting themselves in the place of another. Prerequisite: satisfactory completion of the lower-division writing requirement.

139 Special Topics in Political Theory and Methods (4). May be repeated for credit as topic varies.

140–149: INTERNATIONAL RELATIONS

141A Environmental Politics and Policy (4). Lecture, three hours. Provides a multifaceted foundation for the development of environmental problem-solving and policy-making skills. Examines "nature" from a range of historical and cultural perspectives. Links socio-ecological stress theories to a range of landscapes and contemporary debates. Current air, water, and land policies. Same as Planning, Policy, and Design 138.

141B International Political Economy (4). Examination of problems in global political-economic relations through competing conceptual lenses or grand theories: mercantilism, liberalism, and marxism. Surveys North-North and North-South issues relating power and wealth. **(VIII)**

141C International Political Economy of East Asia (4). Integration of theoretical perspectives in international political economy with the study of economic development in East Asia, with special emphasis on regional integration. **(VIII)**

141E U.S. Foreign Policy Toward Asia (4). U.S. policy toward the countries of East Asia: bilateral and regional security relationships, U.S. economic relations with the major Asian countries, the development of regional institutions, and human rights. **(VIII)**

142B The International Relations of East Asia (4). Surveys various aspects of relations between the nations of East Asia. Topics include historical development of the region; current political and security relations, including the impact of the American military presence; other issues such as economic relations and human rights.

142D U.S. Foreign Policy I: Globalism and Cold War (4). Looks at the changing international perspectives, policy responses, and military strategies of presidential administrations from Truman to Reagan. In assessing the motives and objectives of U.S. foreign policy leaders during the "Cold War" era, the concept of "national interest" is examined.

142E U.S. Foreign Policy II: Cold War Decline and After (4). Deals with U.S. foreign policy from the post-Vietnam War era through the collapse of the Cold War and into the emergence of the post-Cold War era, roughly from 1972 to the present.

142F U.S. Foreign Policy III: National Security Decision-Making (4). Concept of "national security" from 1947–1990s is reviewed. Organizational and psychological factors that influence decision-making, the dangers of "groupthink," and the issues of accountability are analyzed. National security agenda (military, economic, environmental, and social) for the 1990s is discussed.

142G U.S. Coercive Diplomacy (4). Examines the theory of compellence and the U.S. practice of coercive diplomacy—the power to change the behavior of other governments. Specific case examples include the Cuban missile crisis, bombing of North Vietnam, the Nicaraguan Contras, Desert Shield/Desert Storm, and Libya. Prerequisite: junior or senior standing.

142H Human Rights and Foreign Policy (4). Analyzes theories, patterns, and cases of human rights foreign policy. How do countries pursue the values and standards of human rights in their foreign relations? How does the U.S. fit into worldwide trends? Examines U.S. behavior and international human rights. **(VIII)**

143B Alternative Security (4). Seminar designed to critically evaluate the major means of preventing the outbreak of a great war—deterrence—and some major alternatives to this policy. Prerequisite: Political Science 42A.

143D Global Environmental Issues (4). While many agree that environmental problems threaten humankind, there is much disagreement over the nature of these threats and how to address them. Examines global environmental issues from various perspectives in order to provide answers to these questions. Same as Planning, Policy, and Design 136 and International Studies 120.

143E Globalization and Its Discontents (4). Reviews current literature on globalization and its impact on global, regional, and domestic politics. Explores how different states, nations, and cultures respond to common global predicaments and opportunities emanating from the international economy and the global institutions associated with it. **(VIII)**

143F Intelligence in International Politics (4). Intelligence agencies, activities, and functions—their impact on international politics; how governments and societies seek to control intelligence agencies and activities; and how intelligence agencies work—their techniques, resources, technology, problems, successes, and failures.

144A Approaches to International Relations (4). Reviews theoretical and methodological approaches to the study of international relations using contending perspectives to analyze power and influence, capabilities, interdependence, reciprocity, international regimes, anarchy, cooperation, imperialism, and hegemony.

146A Ethics and International Relations (4). Introduces students to the dynamic field of ethics and international relations. A variety of traditional and emerging perspectives are examined, skeptical views are discussed in detail, and arguments are illustrated with current cases. Same as Planning, Policy, and Design 140. **(VIII)**

149 Special Topics in International Relations (4). May be repeated for credit as topic varies.

150–159: COMPARATIVE POLITICS

150A Seminar on Regime Change in East Asia (4). Examines nine factors relevant to regime change, studying one factor each week in class. Students write four short (two-page) analytic papers, and one eight–ten-page research paper on one country. Prerequisites: Political Science 6A, 6B, 6C and satisfactory completion of the lower-division writing requirement.

151A East Asian Politics (4). Explores the recent history and political systems of China, Japan, and Korea, comparing the three countries with each other and with occasional reference to the United States, British, and French systems. **(VIII)**

151B Introduction to Chinese Politics (4). Background to the Chinese revolution, rise of the Communist party; and institutions, ideology, and structure of Communist party rule from 1949–present. **(VIII)**

151C Chinese Politics: Policy, Leadership, and Change (4). Examines major policies from 1949 to the present, and considers the changing role of the Communist Party and its shifting treatment of various social groups; the era of Mao Zedong, reforms under Deng, and post-Deng politics. **(VIII)**

151D Japanese Politics: State and Economy in Modern Japan (4). Introduction to the political foundations and economic achievements of modern Japan. Focus on the development and evolving roles and functions of the principal institutional actors in Japan's political economy. **(VIII)**

151E Are Chinese Politics Changing? (4). There's been speculation about whether the Chinese political system is fundamentally changing. This upper-division writing seminar reviews new books on this topic and considers the question from a range of angles. Four two-page papers and one 8–10-page paper required. Prerequisite: satisfactory completion of the lower-division writing requirement.

151F Korean Politics and Society (4). Examination of contemporary political/social structures and process of Korea (South and North). Historical and cultural influences on current political systems and policies. Also included are economic development, national security, unification issues, and foreign relations. **(VIII)**

151G Electoral Systems (4). A worldwide overview of electoral laws by which votes are converted into assembly seats. Systematic analysis of these laws and their effect on political process and stability. Single-, two-, and multi-party systems. Proportional representation versus plurality rule. Majoritarian and consensus patterns of government. Political Science 52B and 151G may not both be taken for credit.

151H Voting and Political Manipulation (4). Introduction to social choice and cooperative games. Topics include majority rule, types of voting methods, apportionment and proportional representation, agenda manipulation, coalition formation, voting power, political consequences of electoral laws. Same as International Studies 156A and Social Science 121T.

152C German Politics and Society (4). Concentrates on twentieth-century German politics and society, focusing on the contemporary political system of democratic West Germany. Study of the historical legacies of Weimar and the Nazi period, the postwar division between the two German states, and their reunification. **(VIII)**

152D Post-Soviet Politics I (4). An overview of the present sociopolitical structure and of the major national cultures within the former Soviet Union. **(VIII)**

152F West European Politics (4). Explores four main themes: (1) thinking scientifically about politics; (2) understanding the linkages between different political structures and spheres of activity; (3) evaluating some theories about politics; (4) learning about three countries: Britain, France, and Germany. **(VIII)**

152G European Politics (4). An introduction to the politics of Europe including the smaller countries and the former Warsaw Pact. Includes case study of three or four countries, as well as contemporary issues such as globalization, immigration, population decline, and European integration.

153A Latin American Politics (4). Explores the common political dynamics of Latin America, as well as the political histories and prospects of selected countries of the region. Places Latin American politics in an analytical framework derived from comparative politics. **(VIII)**

153B Canadian Politics (4). An overview of contemporary Canadian government and politics. In addition to consideration of the basic structures and processes of Canadian government, topics may include regionalism, federalism, western alienation and oil, Canadian solutions to social welfare policy questions, developments in Quebec. **(VIII)**

153C Research in Canadian Politics (4). Intensive consideration of several topics in Canadian politics and society, leading to the writing of a research paper by each student. Topics are oriented toward contemporary issues of public policy. Prerequisite: Political Science 153B or consent of instructor.

153E Human Rights (4). Examines the causes and consequences of human rights violations with a focus on Latin America. What are human rights? When and where are they violated? What political mechanisms are available to deal with human rights problems? How effective are they? **(VIII)**

154C Comparative Politics: Four Nations, Three Continents (4). Studies four countries in a comparative fashion: their respective political histories and cultural traditions, actual differences among their superficially similar party, parliamentary, and executive institutions; contemporary economic policy. The countries represent three continents and stand at varying levels of economic development. **(VIII)**

154E Comparative Political Economy (4). Examines the interaction between politics and markets, both in theory and in practice, explicitly linking classic works on political economy with current policy debates. Studies how political systems and markets are organized in different national settings.

154F Peoples and Cultures of Post-Soviet Eurasia (4). Examines the cultures and political conflicts of the more than 130 indigenous ethnic groups in the European and Asian territories of the former U.S.S.R. Emphasis is on the theoretical issues of ethnicity, nationalism, and conflict management. Same as Anthropology 164P. **(VIII)**

154G Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Anthropology 136D, International Studies 183E, and Social Science 183E. **(VIII)**

155B Political/Social Impacts of Computing (4). Aims to increase our understanding of the major impacts of computer and telecommunications technologies on contemporary society. Emphasis on the uses and effects of these technologies on the political world, as well as other effects on society that are policy-relevant. Analytic research paper required. Prerequisite: consent of instructor.

155C Organizations (4). How bureaucracies, formal organizations, and voluntary associations work, how and why they grow, and where they are going. History and structure of organizational rationality; dynamics of organized groups; behavior in organizations. The limits of bureaucratization and attempts to overcome these limits through decentralization. Same as Sociology 141.

155E Revolution and Collective Political Violence (4). Examines the theory of collective political violence, internal war, and insurgency. Considers causes and "process" of revolutions; comparative characteristics of organized armed movements; personality of revolutionary leaders. U.S. foreign policy and military doctrine on insurgency and low-intensity conflict reviewed. Prerequisite: satisfaction of the lower-division writing requirement.

155F Political Economy of Japan (4). Surveys postwar developments in the politics and political economy of Japan. Topics include the political and institutional context of policy making; pressures for change which Japan's political economy has faced in the last decade; and Japan's foreign policies, past and present. **(VIII)**

156A Political Participation (4). The ways in which people in various political systems take part in politics, especially in activities directed toward affecting outcomes. Who is active, what they do, why they do it, and what difference it makes. **(VIII)**

156B Participation and Representation (4). Examines the concepts "political participation" and "political representation" and the interconnection between these concepts. Addresses both the theoretical issues and debates raised by these concepts and considers how they are studied empirically. Prerequisite: upper-division standing or consent of instructor.

156C Citizen Politics (4). Study of the role of public opinion in the political process. Reviews some of the key research approaches and findings on which our current understanding of public opinion is based, and provides an opportunity to conduct research and to analyze public opinion surveys. Prerequisite: satisfactory completion of the lower-division writing requirement.

156D Social Movements and Collective Behavior (4). A survey of models of collective action drawn from sociology, economics, psychology, and political science, and focusing on areas such as social movements, strikes, crowd psychology, cults, fads, fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Political Science 6A, Sociology 1, or Economics 1. Same as Sociology 174.

157A Nationalism (4). Nationalism, one of the most potent social and political forces of the twentieth century, is explored. Seeks to understand the sources and nature of various forms of nationalism. Prerequisite: satisfactory completion of the lower-division writing requirement. **(VIII)**

159 Special Topics in Comparative Politics (4). May be repeated for credit as topic varies.

170–179: PUBLIC LAW

171A Law and Society (4). Examination of the law and its various roles in society. The nature and meaning of law; legality and power in the American system; law as a mechanism for social change; the role of law in dispute processing, social control, compliance with judicial decisions. Prerequisites: Political Science 71A and satisfactory completion of the lower-division writing requirement.

171B Jurisprudence (4). A survey of legal philosophies. Explores jurisprudence from the ancient Greeks to the present, including natural law philosophy; legal positivism and realism; sociological jurisprudence; and liberal, radical, and conservative thought. Prerequisite: Political Science 71A.

171C Comparative Constitutional Politics (4). Examines the impact of constitutional courts on politics and policy-making in Canada, France, Germany, and the United States. Cases may focus on the constitutional politics of free speech, abortion, rights to property, and the conduct of foreign relations. Prerequisite: Political Science 71A and satisfaction of the lower-division writing requirement.

171D American Constitutional Law (4). American constitutional interpretation through extensive analysis of cases involving the separation of powers, federal-state relations, rights of property, free expression, privacy, criminal due process, political participation, and equality. Corollary topics include legal research methods, development of judicial review, legal reasoning, and the political impact of Supreme Court decisions. Prerequisite: Political Science 71A. Political Science 171D and Criminology, Law and Society C122 may not both be taken for credit.

171F Law in the Twenty-First Century (4). Examines the complex relationship between law, the social sciences, and modern society. Lectures explore such issues as the interplay between technology and constitutional rights, the impact of science on law, and the evolving roles of attorneys and judges. Same as Social Science 172D.

172A International Law (4). Examination of the origin, changing structure, and application of international law, and the role of legal norms in regulating the behavior of states and maintaining international order. The use of force, pacific settlement of disputes among nations, human rights, international terrorism. Prerequisite: Political Science 71A. **(VIII)**

172B International Law and the U.S. Legal System (4). Explores how international law and U.S. law interact, focusing on recent cases and controversies. Topics include: treaty and customary law as U.S. law; international human rights litigation in U.S. courts; war powers; detentions in the war on terror; and torture. Prerequisite: Political Science 71A or 172A. **(VIII)**

174A Civil Liberties (4). Political analysis of selected Supreme Court cases involving claims under the Bill of Rights and the Fourteenth Amendment. Topics include: race, sex, and other forms of discrimination; criminal justice; privacy; freedom of speech and related claims. Prerequisite: Political Science 71A. Political Science 174A and Criminology, Law and Society C122 may not both be taken for credit.

174B Contemporary Constitutional Rights (4). Addresses a central aspect of politics: the interpretation and application of the United States' fundamental rules. These rules tell us something about the goals of society, and the means chosen to achieve them by allocating rights and duties, costs, and benefits among its members. Prerequisite: Political Science 71A or consent of instructor.

174C U.S. Supreme Court (4) Detailed overview and analysis of the role played by the U.S. Supreme Court in the American political system. Judicial review, appointment of justices, judicial activism and judicial restraint, process of case selection, court deliberation, land decision-making, impact of Supreme Court decisions. Prerequisite: satisfactory completion of the lower-division writing requirement.

179 Special Topics in Public Law (4). Prerequisite: Political Science 71A. May be repeated for credit as topics vary.

SPECIAL COURSES—UPPER-DIVISION

H180 Honors Seminar in Political Science (4). Restricted to students enrolled in the Honors Program in Political Science. May be taken for credit three times as topics vary.

H182A Honors Thesis Workshop (4). A weekly seminar/workshop to facilitate the exchange of ideas and research strategies among students and to review their progress in writing the thesis. Prerequisite: consent of instructor. Open only to students in the Political Science Senior Thesis program.

183 Public Affairs Internship (4). Supervised internship and study in political, governmental, nonprofit, or related organizations for students participating in the Department's Public Affairs Internship Program. Enrollment dependent upon availability of intern positions. Pass/Not Pass only. Prerequisite: consent of instructor. May be taken for credit three times.

184 Government Internship (4). Internship and study in political, governmental, nonprofit, or related organizations for students participating in the UCDC Program. Pass/Not Pass only. Prerequisite: consent of instructor. May be taken for credit twice.

190 Senior Thesis (4). Prerequisite: consent of instructor and satisfactory completion of the lower-division writing requirement. May be taken for credit three times.

197 Field Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Directed Group Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies. Students may enroll for only one 199 each quarter.

GRADUATE

210A-B-C Research Seminar in Politics and Society (1.3-1.3-1.4). Weekly reports and colloquia by faculty, students, and visitors. Students required to report on one research project over the course of three quarters. Required of first- and second-year graduate students in Political Science. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

211A Foundations of Modern Political Science (4). Provides an introduction to major works by highly influential scholars in the nineteenth and twentieth centuries, such as Marx and Engels, Mosca, Michels, Weber, Wallas, and Lasswell, that constitute the foundation of contemporary political science. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

211B Micropolitics (4). Provides students with comprehensive introduction to the substance and methods of the study of political behavior. Focuses on the level of individual behavior, but the relation to macrosocial analysis is considered. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

211C Macropolitics (4). Examines some of the major research issues in political science involving macro-level questions: systemic processes, political institutions, or system outputs. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

219A-Z Special Topics in Politics and Society (4). Current research in politics and society. May be repeated for credit as topics vary.

221A Public Policy (4). Explores different approaches to public policy analysis, the diverse conceptions of the goals and objectives that should be served by policy, and the appropriate role of the policy analyst. Policy consequences are traced to indirect and subtle incentives and disincentives. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 221 and Criminology, Law and Society C255.

222A Collaborative Governance and Public Management (4). Introduction to inclusive management. To make effective use of public resources, public managers are inventing ways of managing that alter relationships within organizations, between organizations, between sectors, and with the public. Requires rethinking fundamentals such as leadership and motivation. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 283.

223A Theories of Power and Empowerment (4). Studies different ways of thinking about power and its uses. Explores theories of power that inform various notions of empowerment, including resistance, participatory democracy, and workplace empowerment. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 279 and Sociology 271.

225A Planning, Policy, and Decentralization (4). Critically examines planning and decentralization with a focus on developing countries. Review of theoretical roots, actors, processes, and mechanisms integral to decentralization in planning. Substantive topics covered include social capital, collective action, popular participation, and elite capture. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 263.

229 Advanced Research Methods: Varied Topics (4). Topics in advanced research methods. Topics will vary. Prerequisite: graduate standing. May be repeated for credit as topics vary.

232A Introduction to Voting Theory (4). Introduction to voting modules. Substantive topics include majority rule, voting methods and their properties, apportionment and proportional representation, agenda manipulation, coalition formation, voting power, political consequences of electoral laws. Prerequisite: graduate standing or consent of instructor.

232B Electoral Systems Seminar (4). Studies electoral systems worldwide, analyzes their effect on the number of parties and duration of government cabinets, and applies the results to the present democratizing countries. Prerequisite: graduate standing or consent of instructor.

234A Research Methods in Political Science (4). An introduction to standard research techniques in political science. Issues of epistemology, research design, and approaches to empirical analysis. Prerequisites: graduate standing or consent of instructor, and upper-division or graduate-level statistics.

240A American Foreign Policy Decision Making (4). Assesses the changing international perspectives, policy instruments, and decision making processes of United States presidential administrations since World War II. Prerequisite: graduate standing or consent of instructor.

241B Seminar in International Relations Theory (4). Overview of the major theories guiding research and scholarship in international relations. Focus on major conceptual approaches (realism, neoliberalism, marxism) and levels of analysis (systemic, state, and subnational), as well as on methodological/epistemological debates engulfing the field. Prerequisite: graduate standing or consent of instructor.

245A U.S. Ethnic Politics (4). Assesses theories of ethnic political attitudes and behaviors in U.S. politics and examines methodological approaches to testing theories of ethnic politics. The primary focus is contemporary ethnic politics with attention to ethnic politics in American political development. Prerequisite: graduate standing or consent of instructor. Same as Chicano/Latino Studies 235.

252A The State in Comparative Perspective (4). Seminar examining the state from theoretical, empirical, comparative perspectives. How the state came into being, the state's role in the economy, toward society and internationally, and in policy-making in Western Europe, East Asian newly industrialized countries, the Third World. Prerequisite: graduate standing or consent of instructor.

252E Democracy and Rationality (4). A modern approach to democratic theory including social choice and empirical democratic theory. Addresses the relationship of rationality and democracy, how minorities can be protected, and how democracy can promote deliberation, considering in particular the work of Rawls and Habermas. Prerequisite: graduate standing or consent of instructor.

252F Political Culture and Democracy (4). Examines the political culture literature and its relationship to democratic development. What are the cultural prerequisites of democracy, what aspects of political culture facilitate democratic politics and governmental performance, and what forms and reforms a political culture? Prerequisite: graduate standing or consent of instructor.

253B Regime Change in East Asia (4). Regime change from authoritarianism to democracies (Japan, South Korea, Taiwan); gradual political change (China). Uses theories from comparative literature on regime transition; combines theory with historical institutions, political culture, prior regimes, elements in the transition process in the four countries. Prerequisites: graduate standing or consent of instructor.

254A Introduction to Game Theory (4). Introduction to non-cooperative games. The prisoner's dilemma, Nash equilibrium, sequential games, subgame perfection. Applications include collective action, agenda-setter models, spatial competition of political parties, models of revolution and arms race. Prerequisite: graduate standing or consent of instructor.

260B Political Participation (4). Examines theoretical approaches to the explanation of the pattern of participation and consideration of the results of empirical studies of such activity by mass publics (mainly in Europe and North America). Addresses issues in both comparative politics and political behavior. Prerequisite: graduate standing or consent of instructor.

270A-B-C Seminar in Public Choice I, II, III (4-4-4). Public Choice lies at the intersection of economics and political science. This course involves the use of tools derived from economics to understand the behavior of governments and of citizens when they deal with politics. Prerequisite: graduate standing and Social Science 111H. Same as Economics 270A-B-C.

273A Advanced Qualitative Methods: Analyzing Qualitative Data (4). Introduces students to the theory and practice of analyzing qualitative data. Students must have already learned about data collection and research design for qualitative research and they must have qualitative data they can analyze in the course. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 213 and Sociology 223.

275A Advanced Quantitative Methods in Political Science I (4). Introduces advanced multivariate regression methodologies, non-linear models, and causal analyses with applications in political science. Prerequisites: one year of undergraduate statistics or quantitative analysis; graduate standing or consent of instructor.

285A Introduction to Political Psychology I (4). Reviews theoretical questions regarding the relationship between the analytical and normative and the polity. Considers the relationship between the analytical and normative concerns of psychology and political science, addressing empirical literatures including works on political socialization, ideology and public opinion, identity and rationality.

285B Introduction to Political Psychology II (4). Discusses the complex set of relationships among the three disciplines of politics, psychology, and economics, focusing on human decision-making processes and political choice. Prerequisite: graduate standing or consent of instructor.

290 Dissertation Research (1 to 12). Prerequisite: consent of instructor. May be repeated for credit.

299 Independent Study (4). May be repeated for credit.

THE UNDERGRADUATE MAJOR IN SOCIAL SCIENCE

The major in Social Science provides an interdisciplinary perspective on the study of society, both at the individual and group level. Using the knowledge and methods of all social science disciplines, a student majoring in Social Science develops the skills to think clearly about social concepts and issues. Social Science majors have an opportunity to use their classroom knowledge in applied and individual learning experiences, such as internships, field studies, or research with a faculty advisor.

The core curriculum for the major exposes students to various social science methods and topics, teaching applied computer-based research and statistical analyses. Students select one of two program options, which guides their upper-division course work.

The specialization in Public and Community Service provides students with internship experiences in community, public, and educational organizations. Students who choose the Research and Social Policy specialization gain a more in-depth understanding of social science research and methodology.

REQUIREMENTS FOR THE B.A. DEGREE IN SOCIAL SCIENCE

University Requirements: See pages 55–62.

School Requirements: See page 460.

Requirements for the Major

A. An understanding of the fundamental concepts, analytical tools, and methods of social science: Social Science 1A, 3A, 12A.

B. One course in Introduction to Public Policy and Service: Social Science 40.

C. One course in Cultural Competency: either Social Science 70C or Sociology 63.

D. One course in Leadership: either Social Science 181A, 181B, or 194B.

E. Two courses in Research Methods: Social Science 102A and 170A.

F. Three quarters of Field Studies: Social Science 193A-B-C (must be taken consecutively).

G. One quarter of off-campus internship experience: Social Science 194A.

H. Social Science Module: Choose one of the two specializations and complete three courses from a specific cognate in the chosen specialization.

Students are reminded that the Pass/Not Pass option is not applicable to course requirements A through H above or to any additional requirements listed for specific majors. Courses used to meet requirements A through H are included in the computation of the grade point average in courses required in the major program.

NOTE: Social Science 184A-B (Sage Leadership Research) and 192 (Washington Seminar) may not be used to satisfy the School of Social Sciences requirement.

Specialization in Public and Community Service

Public and Community Service (PCS) is a program integrating academic learning with community and governmental activities. The PCS specialization actively engages students in academic learning through civic participation. It offers students an opportunity to learn about public and community issues by working in designated community agencies and government organizations while applying academic theories and analytical skills to real-world problems.

Choose one cognate and take three courses.

Education:
Education 121, 124, 126, 132, 141A-B-C, 175, 182
Chicano/Latino Studies 180
Economics 158
Psychology 141A

Health:
Anthropology 132A, 134A, 134D, 134E, 134G
Chicano/Latino Studies 157, 168, 171, 172, 178, 179
Psychology 120A, 120D, 121S, 127C, 127E, 127H, 127G, 127I, 127T, 171, 173A, 174A, 174E, 174F
Sociology 154, 164

Governance:
Chicano/Latino Studies 142, 143, 147, 151, 152, 163
Economics 146

International Studies 152A, 156A, 160, 161A, 162, 164, 165, 172, 177B, 177C, 177E
Management 162
Political Science 121E, 122A, 122B, 123A, 123B, 123C, 124A, 124B, 124C, 124D, 124E, 125A, 125B, 126A, 126B, 126C, 126D, 137B, 137C, 142D, 142E, 142F, 171A, 171B, 171C, 171D, 171F, 172A, 172B, 174A, 174B, 174C, 179
Psychology 176
Social Science 103A, 103B, 152A, 152B, 166, 188A
Sociology 141, 144, 176

NOTE: Other special topics courses may be applicable to this specialization; students should see their undergraduate advisor prior to enrolling in a special topics course to ensure that it meets the requirements.

Specialization in Research and Social Policy

This specialization creates an in-depth understanding of social science methods and research. Students with this specialization are prepared for graduate and professional programs or the job market.

Choose one cognate and take three courses:

Education:
Education 121, 126, 150, 157, 170A, 180
Economics 158
Sociology 164, 176

Health:
Anthropology 128B, 134A, 134D
Psychology 112M, 176A, 178N
Sociology 135, 154

Governance:
Anthropology 121G, 121J, 174A
Chicano/Latino Studies 101, 102, 142, 143, 147, 163, 178
International Studies 152A
Political Science 121E, 126B, 126C, 126D, 133D
Sociology 141

NOTE: Other special topics courses may be applicable to this specialization; students should see their undergraduate advisor prior to enrolling in a special topics course to ensure that it meets the requirements.

HONORS PROGRAM IN SOCIAL SCIENCE

The Honors Program for Social Science majors allows students in any specialization or concentration to engage in research leading to the completion of an Honors thesis. The topic for the Honors thesis, reflecting a social science theme, is determined by the student in consultation with a faculty advisor. In addition to satisfying the requirements for the major in Social Science, Honors Program participants must complete additional course work as specified below.

The Honors Program is composed of three four-unit courses: Social Science H190A (Honors Research Workshop), H190B (Honors Thesis Research), and H190C (Honors Thesis). Satisfactory completion of the Honors Thesis course also satisfies the upper-division writing requirement. The Honors Program is open to all junior and senior Social Science majors with an overall GPA of 3.00 and a 3.30 GPA in at least five Social Science courses.

The schedule of courses for the Honors Program is as follows:

1. During the spring quarter of the junior year or the summer prior to the senior year, students formally apply to the Honors Program through the School of Social Sciences Undergraduate Office, 370D Social Science Tower.
2. In the fall quarter of the senior year, students enroll in H190A. This course ends with each student having formulated a written research plan for the honors thesis. Students also select a faculty mentor who has agreed to supervise the research and evaluate the final version of their Honors thesis.
3. In the winter quarter of the senior year, students enroll in H190B and work with their faculty mentor, who supervises and evaluates data collection and analysis.
4. In the spring quarter of the senior year, students enroll in H190C and work with their faculty mentor to complete the final version of their Honors thesis.

PI GAMMA MU: INTERNATIONAL HONOR SOCIETY

The International Honor Society in Social Sciences is the oldest and preeminent honor society in the social sciences with over 150 active chapters in the United States and overseas. Its mission is to encourage and recognize superior scholarship in social science disciplines and to foster cooperation and social service among its members. For more information call the Social Science Undergraduate Office at (949) 824-9229.

Courses in Social Science

***(Schedule of Classes* designation: Soc Sci)**

LOWER-DIVISION

The Social Science curriculum includes major methodological and statistical courses suitable for social science students generally; courses which do not fall within disciplinary boundaries; and senior thesis, field study, and independent study courses.

1A Principles in the Social Sciences (4) W. Introduction to various disciplines within the social sciences. Provides an interdisciplinary perspective on understanding human behavior and social institutions, including interpersonal, economic, political, and cultural activities. For those students desiring a broad introduction to the social sciences. **(III)**

H1E-F-G Honors: Critical Issues in the Social Sciences (6-6-6) F, W, S. Major themes, methods, and works in the social sciences from an interdisciplinary perspective. Each quarter focuses on a different topic. Weekly small seminars emphasizing the development of the skills of critical thinking and quantitative analysis through regular written work are integral to the course. Prerequisite: restricted to members of the Campuswide Honors Program. Same as Social Ecology H20A-B-C. **(III)**

3A Computer-Based Research in the Social Sciences (4) W. Focuses on the data manipulation, data visualization, and information searching techniques that are becoming increasingly popular and important as we move into the twenty-first century. Hands-on experience with mapping, graphics, and data arrays. Prerequisites: freshmen only or consent of instructor; school majors only.

9A General Statistics and Probability I (4) F. Introduction to the variety of statistical applications in many fields, including the humanities, physical and social sciences, business, forensic and health sciences. Descriptive statistics, including percentile ranks, standardization, and normal approximation. Estimation and the measurement of error. For non-Social Sciences majors only. Students who receive credit for Social Science 9A may not receive credit for Anthropology 10A, Political Science 10A, Psychology 10A, Social Ecology 13, Social Science 10A, or Sociology 10A. **(V)**

9B General Statistics and Probability II (4) W. Introduction to statistical inference, sampling distributions, standard error. Hypothesis tests for proportions and means. Inferential techniques for nominal variables including chi-square. Selected applications in fields such as ecology, forensic science, and quantitative stylistics are based on student interests. For non-Social Sciences majors only. Prerequisite: Social Science 9A. Students who receive credit for Social Science 9B may not receive credit for Anthropology 10B, Political Science 10B, Psychology 10B, Social Ecology 13, Social Science 10B, or Sociology 10B. **(V)**

9C General Statistics and Probability III (4) S. Focus on correlation and regression. One-way and two-way factorial analysis of variance. Introduction to repeated measures designs and non-parametric statistics. Critiquing the use of statistics in newspapers and popular magazines. Locating, accessing, and evaluating statistical data. For non-Social Sciences majors only. Prerequisite: Social Science 9B. Students who receive credit for Social Science 9C may not receive credit for Anthropology 10C, Political Science 10C, Psychology 10C, Social Ecology 13, Social Science 10C, or Sociology 10C. **(V)**

10A Probability and Statistics in the Social Sciences I (4) F. Introduction to the variety of statistical applications in the social sciences. Descriptive statistics. Measures of central tendency and dispersion. Percentile ranks. Standardization and normal approximation. Basic probability theory focuses on application to statistical inference and binomial distribution. Laboratory required Corequisite or prerequisite: Social Science 3A. Prerequisite: lower-division standing or consent of instructor. Students who receive credit for Social Science 10A may not receive credit for Anthropology 10A, Political Science 10A, Psychology 10A, Social Ecology 13, Social Science 9A, or Sociology 10A. **(V)**

10B Probability and Statistics in the Social Sciences II (4) W. Introduction to statistical inference, sampling distribution, standard error. Hypothesis tests for proportions and means. Inferential techniques for nominal variables including chi-square, study measures of strengths, significance of relationships between variables, assumptions, data requirements, and types of error in significance tests. Prerequisite: Social Science 10A. Students who receive credit for Social Science 10B may not receive credit for Anthropology 10B, Political Science 10B, Psychology 10B, Social Ecology 13, Social Science 9B, or Sociology 10B. **(V)**

10C Probability and Statistics in the Social Sciences III (4) S. Focus on correlation, regression, and control for effects of variables. One-way and two-way factorial analysis of variance. *A priori* and *a posteriari* comparisons. Introduction to repeated measures design and non-parametric statistics. Discuss use of statistics in newspapers and popular magazines. Prerequisite: Social Science 10B. Students who receive credit for Social Science 10C may not receive credit for Anthropology 10C, Political Science 10C, Psychology 10C, Social Ecology 13, Social Science 9C, or Sociology 10C. **(V)**

12A Introduction to Social Science Analysis (4). Introduction to social science research and analytical models. Theory construction and use of research methods in an interdisciplinary context. Discussion of the application of social science research to public policy. Computer laboratories develop creative thinking, graphing, and data presentation skills. Prerequisite: Social Science 10A.

16A Current Topics in Global Peace and Conflict Studies (2). Topics focus on the perspectives of academic disciplines that examine global issues, bilateral and multilateral relations, and issues related to regions or countries. Students choose seminar subjects, prepare opening remarks, and lead discussions with a faculty member or guest lecturer.

20 Model United Nations (2). Focuses on simulations of the foreign policy pursuits of selected countries in the international community. Emphasis placed on understanding the rules of debate, as well as the policy positions of the student's selected country in the United Nations. Should be taken as a one-year sequence. May be taken for credit six times.

40 Introduction to Public Policy and Service (4). An introduction to the basic theories and principles of public policy. Students examine various influences on the development of public policy and the principle actors in the process, and learn to identify tools and techniques employed in policy making. Prerequisite: School of Social Sciences major only.

70B Introduction to Expressive Forms in American Society (4). A survey of the expressive forms of minority culture groups in the United States. Literature, music, visual art, ritual, and folklore are studied, with an emphasis upon understanding their relationship to their social and cultural contexts. **(III, VII)**

70C Comparing Cultures (4). Introduces students to the scope of cross-cultural comparisons by analyzing the theories, methodologies, and facts utilized by anthropologists, sociologists, social psychologists, political scientists, and historians in comparing cultures. **(III, VII)**

78A Introduction to Asian American Studies I (4). Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as Asian American Studies 60A and History 15C. **(III, VII)**

78B Introduction to Asian American Studies II (4). Examines the renewal of Asian immigration following World War II. Focuses on domestic and international conditions influencing the liberalization of U.S. immigration laws, and the impact of contemporary Asian immigration on the U.S. political economy and social order. Same as Asian American Studies 60B. **(III, VII)**

78C Introduction to Asian American Studies III (4). Analyzes the Asian American experience in comparative perspective, which includes comparisons of different ethnic and racial groups, and across gender and class. Possible topics include labor, economy, politics, migration, nation, popular culture, gender, family, sexuality, and multiraciality. Same as Asian American Studies 60C. **(III, VII)**

89A-Z Special Topics in Social Sciences (2 to 4). May be repeated for credit as topic varies.

90 Introduction to Survey Research in the Social Sciences (4). Introduces major issues in conducting survey research in the social sciences. Topics explored are the history of survey research, sources of error, ethical issues, problems with cross-cultural research, the psychology of non-response, and criticisms of survey research.

UPPER-DIVISION

102A Introduction to Geographic Information Systems (4). Hands-on laboratory course introduces students to the fundamentals of Geographic Information Systems (GIS) technology using social science applications. Students learn to organize, manipulate, and display spatial data leading to the design of their own GIS research project.

102B Intermediate Geographic Information Systems (4). Expands Geographic Information Systems (GIS) skills to more advanced theories and concepts in the spatial analysis of social science issues and particularly to analyzing and interpreting spatial data. Students develop and complete a GIS research project of their own choosing. Prerequisite: Social Science 102A.

103A Game Theory and Politics I (4). Introduction to game theory and a survey of its political applications. Examples of topics covered include voting in small committees, legislatures, and mass elections; interest group activities and environmental issues; institutional design, and the evolution of cooperative behavior. Same as International Studies 105A and Political Science 130A.

103B Game Theory and Politics II (4). More advanced game theory and its political applications, beginning where Game Theory and Politics I ends. Examples of topics covered include revolutions; arms race; spatial models of party competition; political manipulation; political coalitions and their power. Prerequisite: Economics 116 or Political Science 130A. Same as International Studies 105B and Political Science 130B.

115D International Business (4). Introduction to conducting business in the international arena, decision making in the organization, and globalization of markets and production. Topics covered range from tax and finance to ethics, marketing, and more. Continuing corporate regulatory scandals discussed. Same as International Studies 112A. **(VIII)**

115E California and Global Economy (4). Presents the nature of the State's economy and the current and projected role of California in the world economy. Same as International Studies 135. **(VIII)**

115H International Trade (4). Global trade as an essential element of global growth. Covers trade, balance of payments, tariffs, quotas, commercial policy, exchange rates, international financial crises, international economic institutions since WWII. Regions studied include U.S., Japan, European Union, China, India, East Asia. Same as International Studies 113A. **(VIII)**

120 Transnational Gangs (4). Examines the internationalization of U.S. domestic street gangs. The relationship between California gangs Mara Salvatrucha and 18th Street and Mexico/Central American gangs is assessed. Specified topics include: mobilization, migration, territorialism, culture, organization, and use of technology. Same as International Studies 130. **(VIII)**

121T Voting and Political Manipulation (4). Introduction to social choice and cooperative games. Topics include majority rule, types of voting methods, apportionment and proportional representation, agenda manipulation, coalition formation, voting power, political consequences of electoral laws. Same as Political Science 151H and International Studies 156A.

123A U.S. Intervention in Latin America (4). Explores the political, economic, social, and cultural ties that bind Latin America to the United States. Focuses on U.S. intervention and Latin American response from early nineteenth century to present day. Case studies include Mexico, Guatemala, Cuba, Chile, and Central America. Same as International Studies 177D. **(VIII)**

130A-B Science and Religion I, II (4-4). The development of genomics, stem-cell research, robotics, nanotechnology, and neuropharmacology raises difficult religious and philosophical questions. Examines interdisciplinary approaches that cut across institutional boundaries, cultural borders, and religious traditions. **130A:** Focuses on the relationship between religion and biological sciences. **130B:** Focuses on the relationship between religion and cognitive/affective/social neuroscience. Same as Logic and Philosophy of Science 140A-B.

152A Non-Governmental Organization (NGO) Fundamentals (4). Introduction to non-governmental organizations, including their role in U.S. society and the international community. Explores varying definitions of NGOs and the characteristics held in common by all NGOs. Same as International Studies 152A. **(VIII)**

152B Domestic Nonprofit Organizations (4). Introduction to nonprofit organizations. Explores why nonprofit organizations develop, how they operate, and the role they play in the United States. Examines current trends in the nonprofit sector and discusses challenges and criticisms of nonprofit organizations.

164B Domestic Gangs (4). Examines the history and development of California street gangs and the role of historical events in that development. Students will be able to contrast and compare gang cohort behaviors between some of the major gangs in California.

164C Prison Gangs (4). Examines the growth and spread of prison gangs throughout the country. Relationships between prison and street gangs, and possible relationships with foreign drug trafficking organizations studied. Violence examined as the standard to establish dominance in and out of prison.

164D Juvenile Gangs (4). Examines some identified risk factors that can be used to predict gang membership. Compares generational with non-generational gangs and develops a working sociological definition that can be used to identify street gangs. Examines common myths about juveniles and street gangs.

165 Chicano/Latino Families (4). Introduction to research, literature, and issues surrounding the topic of Chicano/Latino families including cultural history, contemporary issues, organization of family, traditions, lifestyle, values, beliefs, generational differences, gender issues, ethnic identity, evolution of demographic patterns, current economic and political standings. Same as Chicano/Latino Studies 170. **(VII)**

167 Chicano/Chicana Labor History (4). Examines origins of Latino/Latina labor from colonial period to present. Emphasis on the issues of race, culture, class, and gender. Focus on processes and institutions including: encomienda, migration, unions, informal economies, Bracero program, domestic work. Same as Chicano/Latino Studies 138. **(VII)**

170A Research Methods in the Social Sciences (4). Examines how interdisciplinary social science research questions are formulated and studies several research methods including: experimental method, quasi-experimental methods, survey research, field research, evaluation research, and meta-analysis. Parametric and non-parametric statistical methods are illustrated using the SPSS program. Prerequisites: Social Sciences 1A, 3A; 10A-B-C or equivalent; 12A and upper-division standing.

170E Society and Culture (4). An introduction to the processes underlying stratification in American society with emphasis on race/ethic/class divisions. These processes also are examined in relationship to the works of major theorists such as Marx, Weber, and Durkheim. **(VII)**

170P Philosophies and World Religions (4). Examines major religious traditions that shape human cultures. A new global order is forming led by globalization of technology, trade, finance, popular culture, education, science, and medicine. What role will religion play in the future? Same as International Studies 151A. **(VIII)**

172A American Culture (4). A survey of the historical development of dominant American culture and society; emphasis on a close reading of key cultural texts, with weekly text as a model of writing examining its use of language and rhetoric. Prerequisite: satisfactory completion of the lower-division writing requirement.

172D Law in the Twenty-First Century (4). Examines the complex relationship between law, the social sciences, and modern society. Lectures explore such issues as the interplay between technology and constitutional rights, the impact of science on law, and the evolving roles of attorneys and judges. Same as Political Science 171F.

172F Latin American and Latino Cultures I (4). Surveys the history, social and economic conditions, gender issues, problems of economic and social development in Latin America and their relation to U.S. Latinos. Topics include the colonial experience, economic relations with the U.S., Latin American migration to the U.S. Same as Chicano/Latino Studies 165. **(VIII)**

172K Latin American Populism (4). Explores and assesses Latin America's political shift to new populism and what is means for the United States. Through readings and extensive discussion, studies how this fits in Latin American history and traditions, tracing populism's roots to current political panorama. Same as International Studies 177A. **(VIII)**

173G Film Media and the Latino Community (4). Uses film as a resource for understanding contemporary issues and problems facing the Chicano/Latino community. (Does not study cinema as a genre.) Same as Chicano/Latino Studies 114. **(VII)**

173H History of Chicano Education (4). Examines the relationship between the development of the public education system and the Chicano community in the U.S. Same as Chicano/Latino Studies 180. **(VII)**

173I Perspectives on the U.S.–Mexican Border (4). Economic aspects of the historical development of the U.S.-Mexican border. The current economic situation in the Southwest and border areas as it affects both Mexico and the Latino/Chicano population is also examined. Same as International Studies 177B and Chicano/Latino Studies 160. **(VII)**

173K Comparative Latino Populations (4). Provides foundation for understanding of Chicano/Latino Studies as an interdisciplinary field of inquiry. Focus on the history, arts, cultures of distinct (Mexican, Cuban, Puerto Rican, Central American) Latino communities. Topics include: precolonial history and culture, conquest, mestizaje, colonialism/neocolonialism, resistance. Same as Chicano/Latino Studies 137. **(VII)**

173L Latinos in a Global Society (4). Examines interconnections between diverse Latino groups in the U.S. and the effects of globalization on their social, cultural, political realities. Topics include: immigration, demographics, socioeconomic differentiation, familial relations, political protest/resistance, law and policy, and links to "homeland" issues. Prerequisite: Social Science 173K. Same as Chicano/Latino Studies 167. **(VII)**

173N Revolution in Latin America (4). Presents a comparative analysis of the causes, development, and consequences of selected revolutionary movements, focusing on outbreaks in Mexico, Bolivia. Cuba, Chile, Nicaragua, and Grenada. Explores topics of state formation, economic nationalism, social justice, ethnicity, and role of international affairs. Same as International Studies 177C. **(VIII)**

173P Cuban Society and Revolution (4). Explores the causes, development, and legacy of the 1959 Revolution. Themes include economic dependency, democracy, race, gender, culture, and the always volatile relations between Cuba and the United States. Same as International Studies 177E. **(VIII)**

173Q Introduction to Cuba: History, Culture, and Society (4). Introduction to Cuban history, culture, and society using social science texts, visual and musical materials. Examines major historical moments including the historical relationship between the United States and explores evolution of Cuban music from the earliest times to present. Same as Chicano/Latino Studies 130 and International Studies 177F. **(VIII)**

175B Ethnic and Racial Communities (4). Examines various theoretical analyses of race and ethnicity, particularly as they apply to Asian Americans. Also explores the relationship of Asian Americans to other racialized minorities in the U.S. Same as Asian American Studies 161. **(VII)**

176A Afro-Latin American Music (4). Musical culture of Afro-Latin American peoples, emphasizing Spanish-speaking Caribbean. Topics include: background in West Africa, the persistence of traditions in the Caribbean, the commercial music of the twentieth century, the connections between musical culture, religion, and the economy. Same as Chicano/Latino Studies 115C. **(VIII)**

NOTE: Courses numbered 177–179 explore Asian American Studies.

177A Globalization, Diaspora, and Racialization (4). Studies the relationship between globalization and racialization and comparatively examines the racialization of Asians in the U.S. with the experiences of other Asians in the diaspora. Attention paid to the cultural expressions of racialization as creation, representation, adaptation, and resistance. Same as Asian American Studies 101.

177B Asian American Women (4). Examines the representations and experiences of Asian American women from diverse perspectives. Explores the commonalities and differences among various groups of Asian American women, with particular focus on history, culture, values, and family roles. Same as Asian American Studies 162. **(VII)**

177D Asian American Family (4). Examines the representations and experiences of Asian American families from diverse standpoints. Analyzes the similarities and differences among family structures with particular attention to cultural values, gender roles, and domestic violence. Same as Asian American Studies 133. **(VII)**

178C The Korean American Experience (4). Explores the factors that have distinctly shaped the Korean American experience, including patterns of racial domination, the profile of immigrant flow, immigrant roles in the urban political economy, politics in Korea, and the role of the church. Same as Asian American Studies 151C. **(VII)**

178D The Vietnamese American Experience (4). Studies the resettlement of Vietnamese in the United States following their exodus from Southeast Asia. Topics discussed include the Vietnam War, the 1975 evacuation, boat and land refugees, the shaping of Vietnamese communities, and Vietnamese American literature. Same as Asian American Studies 151D. **(VII)**

178E The Japanese American Experience (4). Studies the settlement of Japanese in Hawaii and the continental United States since the late nineteenth century. Topics covered include sugar plantations, development of rural Japanese America, World War II internment, post-War community development, and persistence of Japanese American identity. Same as Asian American Studies 151E. **(VII)**

178F South Asian American Experience (4). Examines and compares the experiences of South Asian immigrants in the U.S. over time. Looks at the economic, political, and social positions of the immigrants, with special emphasis on religious changes and the changes in the second and later generations. Same as Asian American Studies 151F.

178H Southeastern Asian American Experience (4). Analyzes experiences of refugees and immigrants from Cambodia, Laos, and Vietnam. Examines political and economic factors for their exodus and how they reconstruct their identities, families, and communities. Issues include educational experiences, public policies, social services, occupational options, homeland relations. Same as Asian American Studies 151H. **(VII)**

178J Chinese American Experiences (4). Analyzes the experiences of Chinese in the United States. Immigration, Chinese exclusion, racial and gender identity. Historical overview and contemporary issues covered. Same as Asian American Studies 151J. **(VII)**

178K Filipina/Filipino American Experience (4). Explores the experience of Filipina/Filipino Americans from the era of Spanish colonization of the Philippines to present-day community formations in the United States, with special emphasis on the twentieth century. Topics include colonialism, nation, migration, gender, and culture. Same as Asian American Studies 151K. **(VII)**

179 Special Topics in Asian American Studies (4). May be repeated for credit as topics vary. **(VII)**

180A-B-C Social Networks/Human Sciences and Complexity (1.3-1.3-1.3). Requires participation in the Human Sciences and Complexity Video Colloquium series with a focus on written analysis of the work of a speaker.

180D Formal Models and Simulation in Social Sciences (4). How do people make choices? Exchange goods, services, and ideas? Or learn about and adapt to their environments? Explores ways to model these and related phenomena, with an emphasis on the value of scientific speculation, computer simulation, and experiential observation.

180G Culture: What Makes It All Work? (4). Basic questions that are addressed: what we mean by culture with new theories and the methods that allow us to begin to do quasi-experimental research into the nature of culture. Extensive use of multi-agent simulation.

180H Artificial Culture: Experiments in Synthetic Anthropology (4). Exploring artificially evolved multi-agent worlds through computer simulations provides new insight into describing, understanding, explaining the complex causal web of biological and cultural processes that make us human. Embraces an evolutionary and computational epistemology, focuses on emergence of distributed cultural cognition.

180I Social Communication and the New Technologies (4). Uses cultural, cognitive, and evolutionary theories of communication to examine the history, social and personal impact, and possible futures of digital forms of communication.

180K Social Life of Information (4). Three great problems in political science: coordination, cooperation, and (social) cognition. How do people coordinate their efforts toward a common goal, how do they cooperate on the production of public goods?

180M Networks of Social Action (4). Analysis of how social networks create social structure, how social actors utilize them, and their unexpected effects. Topics include job search, firm efficiency, and social movements. Visualization programs, computer simulations, and research project.

181 Leadership in the Twenty-First Century (4). Students learn about theoretical and practical issues related to leadership and leadership development. Readings and assignments provide opportunity to learn of contemporary leadership theory, values, ethics and power, organizational development, gender and leadership, and cultural competence.

181A Ethical Leadership (4). Explores historical and contemporary theories of ethical and unethical leadership. Examines models of "good leadership" such as cardinal and monastic virtues; and models of "bad leadership," such as Machiavelli's *Prince*. Explores the philosophies, styles, and accomplishments of leaders.

181B Fundamentals of Leadership Theory (4). An examination of theories and skills necessary for the development of effective leadership including historical and more recently developed models. Connecting theory to practice, students learn to facilitate appropriate learned elements to develop an individual leadership approach, process, and style. Prerequisite: School of Social Sciences major only.

182A Exploring Society Through Photography (4). Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques or the digital equivalent. Same as Anthropology 176A and Sociology 114A. **(IX)**

183A International Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to international studies. Pass/Not Pass only. May be taken for credit four times. Same as Humanities 183A, Social Ecology 183A, and International Studies 183A.

183B Senior Seminar in Mediation (4). Students develop mediation skills and refine knowledge in the practice and theory of conflict resolution. Students who complete this course may serve as mediators in the Campus Mediation Program. Course is a prerequisite to completing Independent Study as an intern practicing mediation with the OC Human Relations Commission in small claims court. Prerequisite: upper-division standing. Same as Humanities 183B and Social Ecology 183B.

183C Senior Seminar in Conflict Resolution (4). Continuation of Social Science 183B. Students write a senior research paper. Prerequisite: Social Science 183B and satisfactory completion of the lower-division writing requirement. Same as Humanities 183C and Social Ecology 183C.

183E Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Anthropology 136D, International Studies 183E, and Political Science 154G. **(VIII)**

184A Sage Leader Research I (2). Participants in the SAGE Scholars Program learn to define leadership concepts, discover various leadership styles, and develop strong leadership and communication skills resulting in strengthened ability to contribute to and interact with UCI and the Orange County community. Prerequisite: must be selected for the SAGE Scholars Program by the director.

184B Sage Leader Research II (4). Provides a survey of contemporary topics and challenges in the fields of management and leadership. Case studies and text by leading authors are used to analyze key leadership issues in twenty-first century, with particular emphasis on current events. Prerequisites: Social Science 184A and selection for the SAGE Scholars Program.

184D International Studies: Current Topics (2). Topics focus on the perspectives of academic disciplines that examine international issues, bilateral and multilateral relations, and issues related to regions or countries. Students choose seminar subjects, prepare opening remarks, and lead discussions with a faculty member or guest lecturer. Pass/Not Pass only. May be taken for credit four times as topics vary.

184F International Journalism (4). Studies and critically analyzes how the media covers international issues that have reshaped. American foreign coverage and the implications for Americans and U.S. foreign policy. Focuses on international reporting as a way of developing fundamental skills of journalism. Same as International Studies 155A. **(VIII)**

184G Media Writing (4). Designed to teach reporting and news writing basics. Students learn how to gather and organize information, ask effective questions, develop story ideas, research facts, and write stories on deadline. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as International Studies 155B.

185 People in Society (4). Through readings about people in distinctly different societies throughout history, students learn concepts that cross the boundaries of the social science disciplines. Such themes as democracy, elitism, power, social class, and gender as the basis for discussion and writing. Prerequisite: satisfactory completion of the lower-division writing requirement.

186A-B-C HABLA: Language Intervention for Disadvantaged Children (4-4-4). Trains students (fall quarter) to deliver home visits (winter and spring) that promote school readiness among two–four year-olds from low SES and educational backgrounds. Covers fundamentals of child language, literacy, cognitive development; procedures, ethics of home visitation. Work with parents and children to create better home literacy and language environment. Prerequisites: must pass an interview by instructor, be fluent in English and one other language (Spanish most typically), must have experience with preschool children and be culturally sensitive. Same as Chicano/Latino Studies 191A-B-C and Psychology 144A-B-C.

187 Twenty-First-Century Graduate Education (2). Discussion of graduate and professional education in twenty-first century United States. Examines specific strategies for admission to postbaccalaureate programs and success in graduate study culture. Introduction to processes including planning and preparation, school selection, entrance examination preparation, submission of applications, writing personal statements. Prerequisite: upper-division standing or consent of instructor. Pass/Not Pass only.

188A Introduction to Contemporary Middle East Politics (4). An overview of basic issues that shape the politics of the Middle East and North Africa. Themes include implication of the colonization era, nation-state formation, inter-Arab relations, nationalism, Arab-Israel conflict, Islamic resurgence, and more. Same as International Studies 165. **(VIII)**

188B Democratization in the Middle East (4). Examines underlying causes why Arab states continue to resist the spread of democracy and modernity. In this context the course examines relations between the Arab World and the West including democratization efforts, impact of colonization, oil, resources, authoritarianism and religion. Same as International Studies 167. **(VIII)**

188C Islam and the West (4). Analyzes how modernity transformed the relationship between Islam and the West, Jew and Arab, male and female in the Middle East. Analyzes the significance of globalization. Aims at presenting the debate in a way that fosters civilizational/cultural dialogue. Same as International Studies 161. **(VIII)**

188D Iran: Past and Present (4). Pre-revolutionary Iran; and Iran since the revolution. History, oil and politics: domestic and international. Same as International Studies 168. **(VIII)**

188E Israel and the World: An Introduction (4). Examines the founding of Israel, its relationship with the Arab world, the role of the international community, and the challenges it faces today. Same as International Studies 170. **(VIII)**

188F Middle East Security (4). Examines various dilemmas and concerns such as terrorism and weapons of mass destruction. Students explore security dynamics of key actors including Iran, Iraq, Egypt, Syria, Gulf states, Israel, Palestine, and the U.S. and look at civil-military relations and internal security. Same as International Studies 171. **(VIII)**

188G Oil Politics and Democracy in the Middle East (4). Explores the impact of oil politics on Middle East, focusing on modern history of major oil producers. Examines oil and democracy in the Middle East, oil security and American foreign policy and policy-makers' options to decrease dependence on foreign oil. Same as International Studies 172. **(VIII)**

188H War and Peace in the Middle East (4). Discusses causes of war severity in the Middle East, implications of regional conflicts for international security. Studies and applies theories in international relations, compares policies for promoting peace through examination of sources of war and peace in the Middle East. Same as International Studies 173. **(VIII)**

188I Afghanistan (4). Examination of Afghanistan's traditional social organization, economy, political organization, and relationship among ethnic groups as a basis for discussing the consequences of domestic political turmoil and foreign interventions over the last twenty years. The country's current situation and future prospects. Same as International Studies 162. **(VIII)**

188J Lebanese Politics (4). Explores the domestic, regional, and international dynamics that make Lebanon a challenge to its Middle Eastern neighbors. A comparison between Lebanon and other Middle Eastern countries. Same as International Studies 160. **(VIII)**

188K Political Islam (4). Political Islam is a diverse phenomenon. While noticeable barriers exist to "Islamist democracy," it is the Islamists who will define the political future of much of the Muslim world. Reviews experience of Saudi Arabia, Iran, Egypt, Pakistan, Turkey, and Indonesia. Same as International Studies 161A. **(VIII)**

188L The Politics of Reconstruction: Iraq (4). Examines the political history of Iraq; prospects of Iraq's economic development; effects of external interventions on Iraqi society; theoretical and practical tools to understand the politics behind reconstructing and nation-building; diverse perspectives on the reconstruction of Iraq. Same as International Studies 164. Formerly Social Science 151. **(VIII)**

188M Psychology of the Middle East Conflict (4). Explores how emotions guide actions; political movements and social identity factors in ethnic, religious, or other group conflicts; psycho-biographies of political leaders and effects on foreign policy making; decisions to go to war; psychological dimensions of conflict and conflict resolution. Same as International Studies 166. Formerly Social Science 153. **(VIII)**

189A-Z Special Topics in Social Sciences (2 to 4). May be repeated for credit as topic varies.

H190A Honors Research Workshop (4). Student develops a 10–15-page prospectus of research for the honors thesis which includes: the research question, literature review, methods of investigation, and bibliography. Student selects a faculty mentor who will supervise thesis research and writing in winter and spring. Prerequisite: acceptance into the Honors Program for Social Science majors.

H190B Honors Thesis Research (4). The student initiates and completes data collection for the honors thesis. A faculty mentor provides supervision and feedback on thesis chapters. Prerequisite: Social Science H190A.

H190C Honors Thesis (4). The student completes, with the approval of the faculty mentor, an honors thesis containing: statement of the problem, literature review, research hypotheses, methods of investigation, results, discussion, and bibliography. Prerequisites: Social Science H190B and satisfactory completion of the lower-division writing requirement.

191 Graduate-Mentored Study in the Social Sciences (4). Offers a hands-on research experience while increasing awareness of the various disciplines in the social sciences and of the requirements of graduate school. Features graduate-mentored study under the supervision of the Associate Dean. Pass/Not Pass only. Prerequisite: identification of a graduate student (who is in good standing) as a mentor.

192 The Washington Seminar (4). Interdisciplinary seminar examines and explores unique aspects (e.g., governmental, cultural, political, the arts, historical, media related) of Washington, D.C. Core course mandatory for all participants in Washington D.C. Center Program. Prerequisite: selected for Washington D.C. Center Program. Same as University Studies 194.

193A-B-C Field Studies in Public and Community Service (4-4-4). Advanced training in qualitative and ethnographic research centered on community service. Students pursue field studies at non-profit agencies (200 hours) to understand current social problems in underrepresented and underserved communities. Through field placement, students apply theory to practice. Prerequisites: Social Science 70C or Sociology 63; satisfactory completion of the lower-division writing requirement and consent of instructor. Open only to Social Science majors.

194A Public and Community Service Internship (2 to 4) F, W, S, Summer. Introduces the role of etiquette and leadership in the professional environment. With a two-unit (50 hours) or four-unit (100 hours) credit option, students intern at a nonprofit agency exploring their roles as community leaders and improving their professional skills. Prerequisite: Social Science majors only. Pass/Not Pass Only. May be taken for credit twice, for a maximum of 8 units. Formerly Social Science 194. **(IX)**

194B Advanced Community Internship (2 to 4) F, W, S, Summer. Required to complete 50 (two units) or 100 (four units) hours at a nonprofit organization, students engage in lectures related to the formation and maintenance of nonprofit organizations. Grant writing, funding issues, and effective service delivery are addressed. Prerequisites: Social Science 194A; Social Science majors only. Pass/Not Pass Only. Maybe taken for credit three times. **(IX)**

195A-B-C Educational Policy Field Studies (4-4-4) F, W, S. Students learn to integrate academic course work with experiential learning; to examine the effects of educational policy on urban and suburban schools; to discover the relationship between community service and personal academic interests; and to develop awareness about the challenges of public education.

196 Global Connect (2 or 4) F, W, S. Identifies factors of change that influence the twenty-first century. Students serve as mentors at high schools to introduce globalization issues through workshops and lectures. Prerequisites: must submit application and have a 3.0 or higher overall GPA. May be taken for credit three times. **(IX)**

197 Professional Internship (2 to 4) F, W, S. Students apply classroom knowledge through research projects in nonprofit agencies (local, state, and government) and the private sector. They pose solutions to agency-posed questions. Students gain field experience through 50 hours (for 2 units) or 100 (for 4 units). Pass/Not Pass only. Prerequisites: satisfactory completion of the lower-division writing requirement and consent of internship coordinator or faculty sponsor. May be taken for credit for a total of 8 units. **(IX)**

198 Directed Group Study (2 to 4) F, W, S. Directed group study on special topics. Prerequisites: consent of instructor and department chair. May be taken for credit for a total of 12 units.

199 Individual Study (2 to 4) F, W, S. Opportunities to do research and learn new skills outside the normal classroom environment. Students participate in planned research and study activities under a written contract with a supervising UCI instructor. Prerequisites: upper-division standing; consent of instructor and department chair. May be taken for credit for a total of 16 units. Students may enroll for only one 199 each quarter.

DEPARTMENT OF SOCIOLOGY

4215 Social Science Plaza B; (949) 824-7637
Wang Feng, **Department Chair**

Undergraduate Program

Sociology studies societies and human groups. It examines social conflict and cooperation, and the organization of families, communities, workplaces, and nations. The program at UCI covers the breadth of the discipline while giving students opportunities to conduct independent research, to do an internship in the community, to participate in an Honors Program, and to take advantage of departmental opportunities in such areas as human services, diversity, international sociology, and business, economy, and society. All students take basic courses on social institutions, theory, and methods. Students then take more specialized courses such as Race and Ethnicity, Social Psychology, Sociology of Gender, or Chinese Society. Courses are enriched by ongoing faculty research on such topics as the work and family of immigrants to the U.S., economic change in Asia, the relation between women and men in different social classes and ethnic groups, and attitudes to sexual behavior.

In addition to developing students' ability to critically analyze and understand social patterns, the major is relevant to professional careers in high school teaching, social work, urban planning, law, business, public health, and government service. It also provides training for advanced graduate work in sociology.

REQUIREMENTS FOR THE B.A. DEGREE IN SOCIOLOGY

University Requirements: See pages 55–62.

School Requirements: See page 460.

Departmental Requirements for the Major

School requirements must be met and must include 12 courses (48 units) as specified below:

A. Sociology 1 and either 2 or 3.

B. One course in methods (Sociology 110) and one course in theory (Sociology 120).

C. One course in research design and implementation (Sociology 180A; required for all majors). The second course in the sequence (Sociology 180B) is for students who pass the first course and wish to write a thesis.

D. Five courses selected from the following list of core courses, no more than two of which may be lower-division: Sociology 31, 41, 43, 44, 56, 62, 63, 135, 141, 144, 145, 156, 161, 164, 173, 174, 175B.

E. One additional upper-division Sociology course and one additional introductory course from another social science discipline.

Honors Program in Sociology

The Honors Program in Sociology is open to outstanding Sociology majors during their junior or senior year. To gain admission to the program, potential Honors students normally take Sociology courses in theory (Sociology 120), methods (Sociology 110), statistics (Sociology 10A-B-C or equivalent) and at least two Sociology core courses. Students who receive an average grade of 3.5 or better in these courses are eligible for the Honors program. In addition, Honors students should have a grade point average of 3.2 or better in all courses taken at UCI. Majors who are transfers may petition for entry into the program based on their grades from their former schools.

During their junior or senior year, Honors Program students write a thesis, designed and carried out under faculty supervision. Projects normally entail some empirical analysis of sociological data. Students meet regularly in a two-quarter Honors seminar to design and carry out these projects, to exchange ideas, and to help analyze each other's work (Sociology H188A and H188B; satisfies Sociology major requirement C: Honors students do *not* have to take Sociology 180A). In addition, Honors students are required to attend at least six Sociology colloquia and subsequent meetings to discuss relevant sociological issues. Upon successful completion of the program, including approval of an honors thesis by the faculty mentor and honors instructor and receiving a grade of B+ or higher in Sociology H188B, students graduate with Honors in Sociology.

Sociology Minor Requirements

Requirements for the minor in Sociology are met by taking seven sociology courses (28 units) as specified below:

A. Sociology 1 and either 2 or 3.

B. One course in methods (Sociology 110) and one course in theory (Sociology 120).

C. In addition, students must either satisfy the School mathematics and computer science requirement (School requirement A), or take three courses (12 units) or equivalent in a single acceptable foreign language.

D. Three courses selected from the following list of core courses, no more than two of which may be lower-division: Sociology 31, 41, 43, 44, 56, 62, 63, 135, 141, 144, 145, 156, 161, 164, 173, 174, 175B.

Graduate Program

Participating Faculty

Edwin Amenta: Political sociology, historical and comparative sociology, social movements, social policy
Stanley R. Bailey: Race and ethnicity, religion, Latin America
Nina Bandelj: Economic sociology, organizations, culture, social networks, comparative sociology, central and eastern Europe
Frank D. Bean: International migration, demography, racial and ethnic relations, economic sociology, family
Catherine I. Bolzendahl: Gender, the welfare state, political sociology comparative sociology, family, quantitative methodology
Susan K. Brown: Immigration, inequality, urban sociology
Carter Butts: Mathematical sociology, social networks, quantitative methodology, human judgment and decision making, economic sociology
Francesca Cancian: Gender sociology of the family, carework, sexual assault
Yen-Sheng Chiang: Social networks, social psychology, group behaviors and dynamics, mathematical and simulation modeling
Katherine Faust: Social networks, research methods
Cynthia Feliciano: Race/ethnicity/minority relations, migration and immigration, education
David John Frank: Globalization, sexuality, the natural environment, higher education
Linton Freeman: Social networks, social structure and cognition, methodology
Ann Hironaka: Political sociology, war and peace, environmental sociology, ethnic and racial conflict
Matt Huffman: Race/gender inequality, labor markets, organizations
Jennifer Lee: Immigration, race/ethnicity, social inequality, Asian American studies
David S. Meyer: Social movements, public policy, peace and war, social justice
Andrew Noymer: Population, social networks, mathematical models, demography of health and mortality, historical demography
Andrew Penner: Gender, inequality, education, family, and race
Joy Pixley: Career hierarchy, dual-career and dual-earner couples, work and family, life course, sex stratification, gender roles, research design
Francesca Polletta: Social movements, democracy, culture, sociology of law, race and ethnicity, social theory
Belinda Robnett: Social movements, race and ethnicity, gender, social change, African Americans
Rubén G. Rumbaut: International migration, the "1.5" generation, comparative race and ethnic relations, structural inequality, identity, health and mental health
Evan Schofer: Comparative political sociology, sociology of education, quantitative methods and statistics, globalization, sociology of the environment, and organization
David A. Smith: World-system analysis, urbanization, development, comparative historical sociology, dependent development in East Asia
David Snow: Collective behavior and social movements, social psychology, urban, social problems, culture and qualitative methods
Judith Stepan-Norris: Labor unions, sociology of work, political sociology, American society, research methods, historical-comparative methods, class formation
Yang Su: Social movements and collective action, political sociology, China's political transition
Judith Treas: Family, social demography, aging, social strartification
Wang Feng: Contemporary demographic, economic, and social processes, social inequality in state socialism, contemporary Chinese society

Affiliated Faculty

Christine Beckman: Organizational theory; gender and inequality; organizational learning and interorganizational relationships; new organizational forms
Kitty C. Calavita: Sociology of law, criminology, social deviance, immigration, and inequality
Gilbert Q. Conchas: Race and social inequality and sociocultural processes
Thurston Domina: Educational policy, inequality, higher education
John D. Dombrink: Crime and criminal justice, deviance, and social control
George Farkas: Educational inequality, early childhood, gender
Martha Feldman: Organization theory and behavior, stability and change in organizations, decision making, and information processing
Michael R. Gottfredson: Criminology, theory, and crime and policy
John R. Hipp: Criminology, community context of crime, household decisions and neighborhood change, quantitative research methods, and social network analysis
C. Ronald Huff: Criminology and public policy
Valerie Jenness: Links between deviance and social control, gender, and social change
James Meeker: Law and society, criminology/delinquency, quantitative methodology
Henry Pontell: Criminal justice, sociology of law, medical sociology
Carroll Seron: Sociology of law, sociology or professions, law and society
Denis Trapido: Social relations, social networks, organizations
Linda Trinh Võ: Asian American studies; race and ethnic relations; immigration theory; gender relations; social stratification and inequity ethnographic research methods; and community and urban sociology
Sara Wakefield: Crime/law/deviance, life course studies, and stratification
Geoff Ward: Race relations, social movements, juvenile justice

The Department of Sociology offers a Ph.D. degree program in Sociology. The focus on research in social inequality reflects departmental faculty strengths. Particular emphases include gender, race/ethnicity, labor, social movements, family, migration, population, political economy, and states and global transformation. The program provides structured training in sociological theory, statistics, and qualitative and quantitative research methods. While the core of the program is sociological, it also includes an interdisciplinary component, incorporating links to anthropology, political science, history, criminology, and urban planning. Small entering cohorts ensure personalized attention for each student and provides them with greater access to professors, allowing for close mentorship relationships. Program faculty take diverse theoretical and methodological approaches to a variety of substantive issues, are committed to empirical research addressing central sociological issues, and are open to intellectual cross-pollination from cognate disciplines.

Graduate students have the opportunity to participate in a variety of interdisciplinary research units, including the Center for the Study of Democracy, the Center for Global Peace and Conflict Studies, and informal research groups in demography and labor studies. The Sociology Department is linked to Women's Studies and various ethnic studies programs, such as Asian American Studies, Chicano/Latino Studies, and African American Studies. Research and funding opportunities are also available through UC-wide programs like Pacific Rim Studies and the Humanities Research Institute located on the UCI campus.

ADMISSION

Students in the program come from diverse educational, ethnic, and social backgrounds, including a number from different countries and various regions of the United States. The deadline for applications to receive full funding consideration for fall admission is January 15. Students are admitted for winter and spring quarter only under exceptional circumstances. Admission is based on application materials and evidence of scholarly potential, including grade point average, GRE scores, statements of purpose, and letters of recommendation.

REQUIREMENTS

Students must complete a two-quarter proseminar, a course in research design, a three-quarter statistics sequence, one seminar each in classical and contemporary theory, an advanced sociological methodology course, and nine Sociology seminars selected in consultation with the student's advisor, in order to build competency in two areas of specialization in the discipline. Course work prepares students to complete an independent research project, which is presented in oral and written form during the winter quarter of their second year. Students must pass a formal evaluation at the end of their second year involving assessment of course work and the second-year research project and evaluation of teaching or research experience. Knowledge of one foreign language is required.

All required course work must be completed prior to advancement to candidacy. The normative time to advance to candidacy is four years. The advancement-to-candidacy examination is based on field examinations in two broad areas of sociology and an oral defense of a dissertation research prospectus, contextualized in the appropriate literature and including a discussion of data collection and methods of analysis. In preparation, students usually take at least the required one quarter of the Dissertation Seminar course during the third year. After advancing to candidacy, students are expected to work in close consultation with their advisor and dissertation committee. Committee approval of a satisfactory dissertation follows a final oral defense of the document. The normative time for completion of the Ph.D. is six years, and the maximum time permitted is eight years.

Feminist Studies Emphasis. A graduate emphasis in Feminist Studies is also available. Refer to the Women's Studies section of the *Catalogue* for information.

Courses in Sociology

***(Schedule of Classes* designation: Sociol)**

LOWER-DIVISION

INTRODUCTORY COURSES

1 Introduction to Sociology (4). Major concepts and approaches to the study of society: social interaction, social differentiation, social control, social change, social institutions. **(III)**

2 International Sociology (4). Introduces international sociology by examining international social structures and processes. Attention to international migration to and from various countries around the world, and to theories and research about the determinants of international migration for both sending and receiving countries. **(III, VIII)**

3 Introduction to Social Problems (4). Focuses on how institutional and organizational features of societies generate problems for people. Particular attention is directed at a set of problems related to political and economic inequality: poverty, racism, sexism, urban and population problems, the environment, the criminal justice system. **(III)**

METHODS

10A-B-C Probability and Statistics (4-4-4). An introduction to probability and statistics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Emphasizes examples from sociology, anthropology, and related social science disciplines. Same as Anthropology 10A-B-C. Students who receive credit for Sociology 10A-B-C may not receive credit for Anthropology 10A-B-C, Political Science 10A-B-C, Psychology 10A-B-C, Social Ecology 13, or Social Science 9A-B-C or 10A-B-C. **(V)**

19 Special Topics: Methods (4). Prerequisites vary. May be repeated for credit as topic varies.

THEORY

23 Understanding Social Facts (4). Focus on perspectives toward the question of what constitutes sociological knowledge and processes through which competent investigators have built sociological arguments from data. Examination of several types of research techniques. **(III)**

29 Special Topics: Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL PSYCHOLOGY

31 Introduction to Social Psychology (4). Studies sociological contributions to theory and research in social psychology, with focus on the social influences on personality, attitudes, beliefs, and behavior; socialization, human groups, and social interaction. Same as Psychology 78A. **(III)**

39 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL STRUCTURE

41 Small Group Behavior (4). Deals with models for understanding behavior in small groups, including coalition formation, socialization, group norms and decision rules, leadership, conformity, group structure, and communication processes.

43 Urban Sociology (4). The nature, causes, and consequences of urbanization are examined along with its changing scale and complexity, demographic and ecological city growth patterns, the quality of life in urban areas, processes of decision-making in cities, and the bearing of sociological investigation on public policy concerns in contemporary urban society. Sociology 43 and Planning, Policy, and Design 40 may not both be taken for credit.

44 Population (4). Introduction to the analysis of human population including fertility, mortality dispersion, sex distribution. Attention is focused on the effects of these variables on, e.g., over-population, social disorganization, and the stability of social institutions. **(VIII)**

49 Special Topics: Structures (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INSTITUTIONS AND CULTURE

51 Asian American Family and Community (4). Briefly examines the history of different Asian American groups and provides an in-depth analysis of issues related to family composition, mate selection, changing gender roles, and intergenerational conflict. **(VII)**

55 Mass Media and American Society (4). Examines the social implications of the fundamental changes in the organization and structure of American mass media since World War II, including the demise of big-city newspapers, the rise of broadcast television, and the fragmentation of radio and magazine markets. Explores the potential implications of emerging technologies—cable, telecast, and direct broadcast satellite (DBS)—on American culture and institutions.

56 Society and Religion (4). A critical and personal examination of the varieties of religious and spiritual experiences human beings are undergoing in contemporary society. The role of conscious understanding and unconscious conditioning regarding religion and spirituality.

59 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

AGE, GENDER, RACE, AND ETHNICITY

62 Marriage and Families (4). Sociological theories and research on marriage, kinship, intimacy, and divorce. Emphasis on comparing family patterns in different social classes, ethnic groups, and societies, and on relating family life to the economy and other social institutions. Topics include gender roles, child-rearing, historical change. **(III)**

63 Race and Ethnicity (4). Focuses on racial and ethnic relations in the United States and compares them with those found in other societies. Analyzes the conditions that favor either cooperation and integration or rivalry, tension, and conflict. Appraises strategies for reducing and resolving conflicts. **(VII)**

65 Cultures in Collision: Indian–White Relations Since Columbus (4). An introductory survey of topics such as: indigenous religious belief and socio-political organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. Slides, films, and trips to local museums enhance student learning. Same as Anthropology 85A. **(VII)**

66 The Life Course (4). How social institutions channel the course of our lives from birth to death. Childhood, adolescence, transition to adulthood. Family, occupations, and other careers. Conversions and turning points. Generations and the influence of population age structures. Cross-cultural and historical comparisons. **(III)**

68A Ethnic and Immigrant America (4). Focusing on Asian, Latino, and Black immigrant groups, examines the second generation's experience of straddling two cultures and growing up American. Covers topics such as assimilation, bilingualism, race relations, education, bicultural conflicts, interracial marriage, and multiracial identities. Same as Chicano/Latino Studies 65. **(VII)**

69 Special Topics: Age, Gender, Race, and Ethnicity (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIETIES AND SOCIAL INEQUALITY

77 Social Change in East Asia (4). Introduction to comparative sociology focusing on social change in East Asia. Particular attention to macrostructural shifts in these societies such as economic development/underdevelopment, social inequality, political stability/instability, and rapid urbanization and population growth. **(VIII)**

78 Social Work (4). Provides conceptual tools to understand the social welfare response to need as it has evolved from the seventeenth century to the present. Provides an understanding of the structure of service programs and the history of the organized social work profession. **(III)**

79 Special Topics: Societies and Social Inequality (4). Prerequisites vary. May be repeated for credit as topic varies.

UPPER-DIVISION

METHODS

110 Research Methods (4). Methods of data collection and analysis used by sociologists. Experimental methods, surveys, and interviews, field research and participant observation, demographic methods, historical and comparative approaches. Prerequisite when offered for upper-division writing: satisfactory completion of the lower-division writing requirement.

114A Exploring Society Through Photography (4). Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques or the digital equivalent. Same as Anthropology 176A and Social Science 182A. **(IX)**

119 Special Topics: Methods (4). Prerequisites vary. May be repeated for credit as topic varies.

THEORY

120 Sociological Theory (4). What a theory of society is and is not. Historical and contemporary models, perspectives, and schools. Prerequisite: satisfactory completion of the lower-division writing requirement.

126 Critical Political Theory (4). Acquaints students with current political theories, critical of conventional thinking, which attempt to join political, economic, social, historical, linguistic, and philosophical concerns to questions involving the relationships between and among individuals, groups, and institutions in the society, economy, and polity. Prerequisites: upper-division standing and satisfactory completion of the lower-division writing requirement. Same as Political Science 132A.

129 Special Topics: Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL PSYCHOLOGY

135 Social Psychology of Networks (4). Review of network methods used in small group and organizational research. Discussion of social psychological literature relevant to the network of study of cognitive social structure, exchange and communication, identity negotiation, and social control. Case study of network datasets exemplifies research issues. Same as Psychology 178N.

136 Religious Traditions of Asian Americans (4). Studies the religious traditions of Asian Americans, focusing on the transplantation of religious institutions, establishment of sacred spaces, celebration of religious holidays, socialization of children, as well as birth, marriage, gender relations, death, family. Same as Asian American Studies 143. **(VII)**

138 Business Decisions (4). Surveys normative and descriptive models of decision-making behavior, with an emphasis on organizational and policy contexts. Topics include rational choice theory, biases and heuristics, framing effects, and overconfidence. Management fads, panics, and herd behavior are also discussed. Prerequisites: either Anthropology 10A-B-C, Sociology 10A-B-C, Social Sciences 10A-B-C, or Mathematics 2A-B, 7.

139 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL STRUCTURE

141 Organizations (4). How bureaucracies, formal organizations, and voluntary associations work, how and why they grow, and where they are going. History and structure of organizational rationality; dynamics of organized groups; behavior in organizations. The limits of bureaucratization and attempts to overcome these limits through decentralization. Same as Political Science 155C.

142 White-Collar Crime (4) W. Examines criminal activity in business and corporate enterprise, organizations, and the professions. Theories regarding the causes and control of white-collar and corporate crime are covered as well as the numerous definitions of these terms. Same as Criminology, Law and Society 142.

143 Social Networks and Social Support (4). Examines the manner in which behaviors and attitudes of individuals are affected by their network ties to others. How are peoples' opportunities and well-being increased or decreased by their social networks? What are the processes involved? Topics vary and may include studies in mental and physical health, job seeking, separation and loss, and aging.

144 Political Sociology (4). Includes an examination of the major theoretical approaches to political sociology, and the application of these ideas to the politics of advanced capitalist societies. Also considers stability and change in power structures.

145 Occupations and Professions (4). What makes some jobs satisfying and others boring? How does technology influence the workplace? What changes are coming in the U.S. job market? Sociology and psychology of occupations. Students interview workers and study aspects of their occupations. Prerequisite: upper-division standing.

147A Cities and Social Change (4). Focuses on comparative urban political economy and the way cities and urban process are linked to changes in the global system. Attempts to draw on a diverse interdisciplinary literature that includes sociology, geography, and urban planning. Prerequisite: upper-division standing and completion of lower-division writing requirement.

149 Special Topics: Structures (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INSTITUTIONS AND CULTURE

150 Sociology of Religion (4). Examines the effects of religious beliefs, belonging, and institutions on social dynamics, including class, gender, and racial stratification, politics, and social movements. Additional topics: the sociological significance of conversion, commitment, and secularization/sacralization.

152 Sociology and Psychology of the Arts (4). Explores the relationship between artists and the "art world" through which artistic activity is defined, supported, and consumed. Empirical studies in the plastic arts, performing arts, and literature are used to examine varieties of aesthetic expressions. Prerequisite: upper-division standing; authorization required.

153 Sociology of Science (4). Empirical studies of scientific activity, the growth of scientific disciplines, communication in science, and cognitive organization are used to explore the relationship of science, scientific communities, and society. Provides an overview of the literature and the directions of new research in the field. Prerequisites: upper-division standing; satisfactory completion of the lower-division writing requirement.

154 Medical Sociology (4). Current problems in the United States health-care system and proposals for reform. Considers financial barriers to access, the problem of patient dumping, underinsurance affecting the middle class, prenatal and perinatal care, child services, preventative care and needs of the elderly, minorities, low-income people, and the undocumented. Prerequisite: upper-division standing.

155B Baseball and Society (4). An examination of baseball's role in American social life over the last 150 years. Issues of fraternal organizations, national development, capitalism, rationalization, race and ethnicity, gender, economic organization, labor relations, and politics are discussed. Prerequisite: satisfactory completion of the lower-division writing requirement.

156 Deviance (4). Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Same as Psychology 177D and Criminology, Law and Society C107.

158C Money, Work, and Social Life (4). Sociological perspective on issues related to money and work. Consumption practices and lifestyles, jobs and organizations, issues of money in intimate relations, marriage, and households, illegal work, discrimination, economic globalization are discussed. Prerequisite: when offered for upper-division writing, satisfactory completion of the lower-division writing requirement.

159 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INEQUALITY MODULE

161 Sociology of Gender (4). Explores the complex processes contributing to the social construction of gender and sexuality in the U.S. with particular attention to the intersection of gender, race, ethnicity, sexuality, and class; and evaluates how men and women are differentially constituted in the family, education, work, politics, media, and language. Prerequisite when offered for upper-division writing: satisfactory completion of the lower-division writing requirement. **(VII)**

163A Sociology of Sexual Assault (4). Examines the causes and consequences of sexual assault including rape, incest, and child molestation, and efforts to eliminate sexual assault. Explores the impact of gender, media, and "rape culture." Analyzes the effects of assault on victims and paths to recovery.

164 Sociology of Age (4). *Introduction to sociology of age, aging, and the aged.* Problems posed by aging population. Life course transitions. How social organizations influence the life course. Work, health, family in later life. Prerequisite: upper-division standing.

165A Social Inequality: Sociological Perspectives (4). Concrete sociological studies from across the world, including the United States, are compared to give perspectives on social status, power, economic differences, race, ethnicity, and gender. Prerequisites: one course in Anthropology, Economics, Political Science, or Sociology and satisfactory completion of the lower-division writing requirement. **(VIII)**

167A Racial and Ethnic Relations in the United States (4). Examines central questions and issues in the field of race and ethnicity; the emergence, maintenance, and consequences of the ethnic and racial stratification system in the United States; the future of racial and ethnic relations; and relevant public policy issues. Prerequisite: satisfactory completion of the lower-division writing requirement. Same as Chicano/Latino Studies 148.

168 Sexism and Power (4). Sexism may be seen as a particular form of socially constructed power which creates and maintains gender differences as relations and practices of structured inequalities. Males and females are objects constructed in a powered language dominated and controlled by males to their positional and distributional advantage. Prerequisites: upper-division standing and satisfactory completion of the lower-division writing requirement. Same as Political Science 134J.

169 Special Topics: Age, Gender, Race, and Ethnicity (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIETIES AND SOCIAL INEQUALITY

170A Vietnam War (4). Examines social structures and social changes in Vietnamese and U.S. societies through the study of the Vietnam War. **(VIII)**

170B U.S. War on Terrorism (4). Analyzes the United States war on terrorism by focusing on terrorism, the U.S. wars in Afghanistan and Iraq, and changes in police powers throughout the Patriot Act, as well as the political leadership which directs the war. **(VIII)**

170C African American Protest Movements (4). Examines the work of major African American Marxist individuals and organizations in the twentieth century. Their theories of racism, capitalism, and their developed practices are covered. **(VII)**

171 Environmental Sociology (4). Examines society's changing relationship to the natural world. Delineates different models of "nature" and then explores their institutional roots, the social responses they have generated, and their implications for social inequality.

173 Social Stratification (4). Sources, functions, and dynamics of the unequal distribution of wealth, prestige, knowledge, and power in American and other societies.

174 Social Movements and Collective Behavior (4). A survey of models of collective action drawn from sociology, economics, psychology, and political science. Focus on areas such as social movements, strikes, crowd psychology, cults, fads, fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Economics 1, Political Science 6A, or Sociology 1. Same as Political Science 156D.

175A Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Anthropology 163K and East Asian Languages and Literatures 130. **(VIII)**

175B Comparative Societies: China (4). Chinese society from 1949 to present. Social change in the context of political control and ideological considerations. Focus on the power structure, political decision processes, and ideological legitimation, and interplay with the Chinese community and culture. **(VIII)**

175D Comparative International Migration (4). Examines the migration patterns to the three largest nations that receive immigrants (i.e., permanent settlers)—Australia, Canada, and the United States. Same as Asian American Studies 171A. **(VIII)**

176 Social Policy (4). Comparison of theoretical perspectives on the role of the state in contemporary society and an examination of the gender, racial-ethnic, and class dimensions of social policy. Particular focus on social welfare, labor, health policies, and policies on sexual violence.

177 Immigration and Social Policy (4). Explains how people decide to migrate and how they are incorporated into a host society (both historically and currently), examines the effects of immigration on the U.S., analyzes how the framing of immigration shapes the discourse about the issue. Prerequisite: satisfactory completion of the lower-division writing requirement.

179 Special Topics: Societies and Social Inequality (4). Prerequisites vary. May be repeated for credit as topic varies.

RESEARCH AND HONORS

NOTE: Students are reminded that each quarter of a sequential course (i.e., Sociology 180A-B, H188A-B) must be taken in order.

180A-B Sociology Majors Seminar (4-4). Students learn sociology by doing it. A modest-sized research project is planned and implemented by each student. Prerequisites: Sociology 110 and satisfactory completion of the lower-division writing requirement. Limited to Sociology majors only.

182 Sociology Issues Seminar (2). Drawing on experts from campus and community, explores various sociological questions, findings, approaches through lectures and discussion. Students select seminar topics, prepare opening remarks, lead discussion with faculty member, guest lecturer. May be taken for credit four times as topics vary.

H188A-B Honors Research and Thesis (4-4). Focuses on the design and implementation of individual research projects undertaken by senior Sociology majors. Writing projects consist of a proposal and paper on some empirical research. Prerequisites: consent of instructor and honors status; satisfactory completion of the lower-division writing requirement.

189 Special Topics: Honors Sequence (4). Prerequisites vary. May be repeated for credit as topic varies.

197 Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Directed Group Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

GRADUATE

202A Proseminar I in Sociology (1). Introduces first-year graduate students in Sociology to the current research interests of Sociology faculty, as well as to other aspects of graduate life at UCI and to the profession of sociology more generally. Prerequisites: graduate standing, consent of instructor.

202B Proseminar II in Sociology (4). Focus is on second-year research projects, design, development, data gathering, analysis, and preparing both oral and written presentations of the results. Students learn new analytic and writing skills, gain experience with the research process, and become socialized about professional standards, customs, and institutions. Prerequisites: graduate standing, consent of instructor.

210A Classical Social Theory (4). Examines the development of classical sociological theory through the writings of Karl Marx, Emile Durkheim, Max Weber, Georg Simmel, and George Herbert Mead. Prerequisites: graduate standing; consent of instructor. Same as Social Science 253N.

210B Contemporary Social Theory (4). Familiarizes students with twentieth-century developments in social thought that have influenced sociological research, suggesting "what is living and what is dead" in the "classics" and offering an overview of the main outlines of recent sociological theorizing. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253R.

211A Sociology of Gender (4). An introduction to the sociology of gender in the U.S. and globally. The social construction of gender and sexuality; theoretical perspectives and feminist frameworks. Theories of economy, patriarch, and race, and the social positions of women and men. Prerequisites: graduate standing, consent of instructor.

212 Network Theory (4). An introduction to theoretical work in the field of social networks. Topics include baseline models, homphily, and propinquity, exchange and power, balance theory, diffusion and social influence, equivalence, and cohesion. Deductive use of theory to make novel predictions is emphasized. Prerequisite: graduate standing.

219 Special Topics: Theory (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

220A Research Design (4). Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant observations, behavior observations, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisite: graduate standing or consent of instructor. Sociology 220A and Sociology 265 may not both be taken for credit.

221A-B-C Graduate Statistics I, II, III (4-4-4). Statistics with emphasis on applications in sociology and anthropology. Examines exploratory uses of statistical tools in these fields as well as univariate, bivariate, and multivariate applications in the context of the general linear model. Prerequisites: graduate standing, consent of instructor.

222A Comparative and Historical Methods (4). Topics include the logic of comparative and historical analysis techniques and the examination of exemplar works in representative problem areas. Prerequisites: graduate standing, consent of instructor.

223 Advanced Qualitative Methods: Analyzing Qualitative Data (4). Introduces students to the theory and practice of analyzing qualitative data. Students must have already learned about data collection and research design for qualitative research and they must have qualitative data they can analyze in the course. Prerequisite: graduate standing or consent of instructor. Same as Political Science 273A and Planning, Policy, and Design 213.

224A Survey Research Methods I: Designing Surveys (4). Trains students to design and administer studies involving interviewing or self-administered questionnaires. Focuses on developing survey projects and designing instruments. Prerequisite: graduate standing.

224B Survey Research Methods II: Conducting Surveys (4). Trains students to design and administer studies involving interviewing or self-administered questionnaires. Focuses on the principles and practices of collecting survey data. Prerequisites: Sociology 224A and graduate standing.

226A Methods of Demographic Analysis (4) S. Introduces basic demographic methods used in social science and public health research. Topics include sources and limitations of demographic data; components of population growth; measures of nuptiality, fertility, mortality, and population mobility projection methods; and demographic models. Prerequisite: graduate standing or consent of instructor.

227A-B Seminar in Ethnographic and Qualitative Field Methods (4-4). Comprehensive and critical discussion of the traditions of qualitative fieldwork; detailed examination of the collection, coding, analysis, and presentation of ethnographic/qualitative field data; and close mentoring of student projects culminating in an original research paper. In-Progress grading. Prerequisite: graduate standing.

229 Special Topics: Methods (1 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

230A Race and Ethnicity (4). An examination of central questions and issues in the field of race and ethnicity through a critical analysis and discussion of the principal theoretical perspectives and paradigms that have framed much of the scholarship in the area. Prerequisites: graduate standing, consent of instructor.

232 Inequality (4). Theoretical and empirical approaches to the study of social and economic inequality, with special attention to race/ethnicity, class, and gender. Prerequisite: graduate standing.

234 Theory of Ethnicity (4). Examines critically the meaning and measurement of ethnicity, race, and nation in sociological theory and research. Theories of ethnicity are explored, along with empirical studies of the construction of ethnic and pan-ethnic identities in historical and contemporary contexts. Prerequisite: graduate standing.

235 Planning and Poverty Alleviation in Developing Countries (4). Critically examines competing conceptualizations, methods of measurement, and poverty alleviation strategies widely used in developing countries. Focuses on poverty conceptualized as economic deprivation, well-being, vulnerability, and social exclusion. Same as Planning, Policy, and Design 251.

236 Immigrant Incorporation (4). Focuses on the conceptual and theoretical ideas on immigrant adaptation and identity to a new country; frameworks that emphasize incorporation as a melting pot; synthesizing the theoretical and empirical literature on incorporation in order to develop better models. Prerequisite: graduate standing.

237 Educational Inequality (4). Focuses on macro-level explanations of inequality of schooling, particularly in the U.S. context. Explores traditional models, such as conflict, functionalism, status-attainment, cultural reproduction, and newer synthetic accounts. Emphasis on higher education access and the intersection of education and work. Prerequisite: graduate standing.

238 Comparative Racial Perspectives: The U.S. vs. Latin America (4). A comparative examination of racial dynamics in the United States and Latin America (Brazilian emphasis) with a focus on African descent populations; paradigms; principal theoretical perspectives; racial identification; census classification; multiracialism; racial attitudes; antiracism strategies. Prerequisite: graduate standing.

239 Special Topics: Social Inequality (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

240A Social Movements (4). A survey of the field of Social Movements, oriented around critical themes in the major theoretical traditions and contemporary exemplars. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253J.

241A Political Sociology (4). Begins with an examination of the three major orientations to the State (Pluralist, Elitist, and Class). Next considers current topics in political sociology including the Welfare State, the New Deal, political behavior, social movements, participation, and democracy. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253I.

241D Norms in International Relations (4). Evaluates various theoretical and empirical approaches to understanding the emergence, diffusion, and effects of international norms. Prerequisite: graduate standing or consent of instructor.

249 Special Topics: Political Sociology and Social Movements (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

252A Global Urbanization (4). Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this process? What are the social-cultural, political, economic effects? How is contemporary urbanization liked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Social Science 254J and Planning, Policy, and Design 273.

259 Special Topics: Global Studies and Comparative Development (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

260A Family and Households (4). Families and households as a fundamental unit of social organization. Concepts and controversies. U.S. demographic trends and global changes in marriage, divorce, fertility, living arrangements. Housework and paid work. Gender and generational inequalities. How families reproduce stratification systems. Prerequisites: graduate standing, consent of instructor.

261A Age, Generations, and the Life Course (4). Age is a central organizing principle of individual lives, social institutions, and human populations. Considers how age is socially defined and how developmental transitions between ages (i.e., growing up and growing older) are accomplished. Prerequisites: graduate standing, consent of instructor.

262A Populations (4). Introduces the interrelationships between population and social organization. Considers measurement and explanation of historical and contemporary trends in birth rates, death rates, migration, and marriage and divorce. Case material is drawn primarily from the U.S. and other industrialized nations. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 253F.

264 Immigrant America (4). The study of the causes and consequences of international migration has become one of the most vital fields of sociological theory and research. Examines principal theoretical perspectives and empirical research on contemporary immigration flows and the processes of incorporation. Prerequisite: graduate standing.

265 Demographic and Social Analysis (DASA) (4). Data collection, organization, and analysis in population studies and demography. Research design issues include sampling, longitudinal research, and comparative research. Prerequisites: graduate standing, consent of instructor, and enrollment in DASA program. Sociology 265 and Sociology 220A may not both be taken for credit.

266 Immigration and Globalization (4). Examines immigration to three leading immigrant-receiving nations: the United States, Canada, and Australia, as both cause and consequence of globalization. Specific attention to Asian migration, as well as assimilation and its relationship to multiculturalism. Prerequisite: graduate standing. Same as Asian American Studies 202.

269 Special Topics: Social Demography (2 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

271 Theories of Power and Empowerment (4). Studies different ways of thinking about power and its uses. Explores theories of power that inform various notions of empowerment, including resistance, participatory democracy, and workplace empowerment. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 279 and Political Science 223A.

272A Work and Industrial Relations (4). Explores the nature, causes, and results of workplace conflict in American Society. Considers topics such as "American Exceptionalism," sex segregation in the workplace, strikes and the role of unions in American society. Prerequisites: graduate standing, consent of instructor.

276 Sexuality and Social Institutions (4). Takes a broad institutional approach to sexuality, arguing that "sexuality" is neither fixed in reality nor free-floating in space but rather institutionalized in a limited set of dynamic cultural and organizational arrangements. Prerequisite: graduate standing or consent of instructor.

279 Special Topics: Social Organizations and Institutions (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

280 Analysis of Social Network Data (4). Overview and application of methods for analyzing social network data. Topics include: data structures, visualization, graph theory, centrality, subgroups, positions, blockmodels, local properties, and statistical models. Social network analysis software is used to analyze a range of examples. Prerequisite: graduate standing.

289 Special Topics (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

290 Dissertation Research (1 to 12). Prerequisites: graduate standing, consent of instructor. May be repeated for credit.

299 Independent Study (1 to 12). Prerequisites: graduate standing, consent of instructor. May be repeated for credit.

GRADUATE PROGRAM IN SOCIAL SCIENCE

In addition to the departmental graduate programs, the School offers the M.A. degree in Social Science with a concentration in Demographic and Social Analysis and the Ph.D. degree in Social Science with a concentration in Mathematical Behavioral Sciences. Each program is administered by a different group of faculty.

Graduate Concentration in Demographic and Social Analysis

Participating Faculty

Hoda Anton-Culver: Epidemiology and preventive medicine
M. Victoria Basolo: Urban politics, regionalism, public choice, interorganizational relationships
Frank Bean: Migration and immigration, immigrants' welfare and demographic behavior
Marlon G. Boarnet: Urban economics, urban planning, urban economic development
Susan K. Brown: International migration, urban sociology, and educational inequality
Michael Burton: Economic anthropology, ecological anthropology, gender
Kitty C. Calavita: Sociology of law, criminology, social deviance, immigration, and inequality
Leo R. Chavez: International migration, Latin American immigrants, medical anthropology
Kenneth S. Chew: Social and historical demography
Philip Cohen: Social demography, inequality, race, and work
C. David Dooley: Community psychology, epidemiology, economic change
Katherine Faust: Social networks, research methods
Susan Greenhalgh: Political economy, feminism/gender, politics of reproduction, critical demography
Bernard N. Grofman: Mathematical models of collective decision making, formal democracy theory, politics of small groups
Matt L. Huffman: Organizations, work, gender inequality
Jennifer Lee: Migration and immigration, race/ethnic/minority relations, urban sociology
John M. Liu: Race/ethnic/minority relations; economy and society
Richard Matthew: International relations, environmental policy, ethics
Richard McCleary: Criminal justice, research methodology, statistics
Robert Newcomb: Social statistics, methodology
Gary Richardson: Economic history, immigration in historical perspective
Rubén G. Rumbaut: International migration, the "1.5" Generation, comparative race and ethnic relations, structural inequality; identity, health, and mental health
David A. Smith: Urban sociology, comparative sociology, political sociology
William C. Thompson: Psychology and law, criminal justice, human judgment and decision making
George Tita: Criminology, community context of violence, urban youth gangs, homicide studies
Judith Treas: Population studies, sociology of aging, sociology of family
Wang Feng: Demography, social change, economy and society
Douglas L. White: Cross-cultural research, mathematical anthropology, social networks

The M.A. in Social Science with a concentration in Demographic and Social Analysis offers specialized training in the research skills to address practical problems confronting society, business, government, and the nonprofit sector. The concentration emphasizes the Pacific Rim and issues defining Southern California's population, such as immigration, changing household and family structure, racial and economic inequalities, and the impact of local and regional population growth. Informed by the interdisciplinary field of demography, the program draws on faculty and courses in the Schools of Social Sciences and Social Ecology.

ADMISSION

Students who wish to complete the program in one year are generally admitted to the program in the fall quarter. Students must hold a B.A. or B.S., normally in a social science or related field, and should have had at least four units of undergraduate statistics or equivalent mathematics courses. Students must meet the general admission requirements for graduate studies, which include official transcripts of all college course work, Graduate Record Examination scores for tests taken within the past five years, and three letters of recommendation. Applicants whose first language is not English must also take the Test of English as a Foreign Language (TOEFL) and achieve a score of 550 or higher on the paper-based test or 213 or higher on the computer-based test.

REQUIREMENTS

The M.A. requires 36 units of study and an oral exit examination. All students must complete 20 units of required courses which include one course in research design, one in demographic methods, one in populations, and two in statistics. In addition, students must complete 16 units of elective courses in population issues or research methods. No more than four units may be internship, independent study, directed readings, or thesis courses (to prepare for the oral examination). One or two electives may be upper-division undergraduate courses, with the remainder being graduate courses. All courses must be completed with a grade of B or better.

The M.A. in Social Science with a concentration in Demographic and Social Analysis may also be awarded to Ph.D. students who complete the necessary requirements.

Graduate Concentration in Mathematical Behavioral Sciences

Participating Faculty

Pierre F. Baldi: Bioinformatics/computational biology; probabilistic modeling/machine learning
Jeffrey Barrett: Philosophy of science, philosophy of physics
William Batchelder: Mathematical models, measurement, and cognitive processes
John P. Boyd: Mathematical anthropology and systems theory
William A. Branch: Macroeconomics, economic theory
Myron Braunstein: Visual perception and computer applications
David Brownstone: Econometrics and industrial organization
Jan K. Brueckner: Urban economics, public economics, industrial organization, and housing finance
Michael Burton: Economic anthropology; gender, family, and households; cognitive anthropology; Africa, Oceania
Carter Butts: Computational and mathematical organization theory, games and economic behavior
Yen-Sheng Chiang: Social networks, rational choice theory (trust, norms and collective action)
Charles F. Chubb: Visual perception, psychophysics
Linda R. Cohen: Political economy, public choice, and governmental regulation of business
Rui J. P. de Figueiredo: Mathematical foundations of neural networks, contextual feedback models for automated image understanding
Barbara Dosher: Memory, information processing, perception
Michael D'Zmura: Vision research, virtual reality
David Eppstein: Computational geometry and geometric optimization, triangulation and mesh generation, graph drawing and information visualization, data depth and robust statistics, analysis of exponential-time algorithms
Jean-Claude Falmagne: Mathematical psychology
Katherine Faust: Social networks, research methods
Steven A. Frank: Complex phenotypes; quantitative dynamics of genetical, biochemical, and cellular mechanisms
Linton C. Freeman: Network models of social structure
Michelle Garfinkel: Macroeconomic and monetary theory
Amihai Glazer: Public choice, especially concerning commitment problems
Bernard N. Grofman: Mathematical models of collective decision making, formal democratic theory, sequential decision making, politics of small groups
Donald Hoffman: Artificial intelligence approaches to human and machine vision, recovery of three-dimensional structure from image motion, visual recognition of objects by their shape
Geoffrey Iverson: Cognitive science and mathematical models
Marek Kaminski: Mathematical modeling and biology, virus dynamics, cancer modeling
L. Robin Keller: Decision analysis, risk analysis, problem structuring, management science
Natalia L. Komarova: Mathematical modeling of biology and language; nonlinear waves
Igor Kopylov: Microeconomic theory, decision theory and game theory
Michael Lee: Mathematical and computational models of stimulus representation, categorization, memory, decision-making and problem-solving
R. Duncan Luce: Mathematical behavioral science
Penelope Maddy: Philosophy of mathematics, philosophy of logic
Michael McBride: Microeconomics, game theory, and political economy
Anthony McGann: Party systems, democratic theory, formal models of political systems, European government
Louis Narens: Measurement, logic, and metacognition
Andrew Noymer: Population, social networks, mathematical models, demography of health and mortality, historical demography
Dale Poirier: Econometrics, both theoretical and empirical, specializing in Bayesian econometrics
A. Kimball Romney: Experimental and psychological anthropology
Donald G. Saari: Mathematics and application of dynamical systems to social sciences
Stergios Skaperdas: Economic theory, political economy
Brian Skyrms: Philosophy of science, metaphysics
Kenneth A. Small: Urban economics, transportation economics, discrete-choice econometrics, energy
Padhraic Smyth: Statistical pattern recognition, probabilistic learning, information theory
George Sperling: Vision, perception, information processing
Ramesh Srinivasan: Perception, development and cortical dynamics
Hal Stern: Bayesian methods, model diagnostics, statistical computing
Mark Steyvers: Computational models of memory, reasoning, and perceptions
Rein Taagepera: Quantitatively predictive models, electoral and party systems, Finno-Ugric area studies
Carole J. Uhlaner: Comparative political participation, formal models of political behavior
Christian Werner: Mathematical geography
Douglas White: Social networks, longitudinal social demography
Charles E. Wright: Skill acquisition and generalization, human motor behavior, visual attention, Virtual Reality Laboratory
Jack Xin: Partial differential equations (PDE), asymptotic analysis, scientific computation, and their applications in fluid dynamics, voice signal processing, biology, nonlinear optics and geoscience
John I. Yellott: Mathematical psychology and vision perception
Hong-Kai Zhao: Applied mathematics in physics, engineering, imaging science, and computer vision

The concentration in Mathematical Behavioral Sciences offers a program of interdisciplinary and mathematical approaches to the study of human behavior, providing high levels of training in current mathematical modeling and in mathematics and software use and programming. The program is administered by an interdisciplinary group of faculty. Within the concentration, two optional emphases are available: Social Networks; and Games, Decisions, and Dynamical Systems. Specific requirements are detailed below.

ADMISSION

Admission to the concentration in Mathematical Behavioral Sciences requires evidence of appreciable mathematical skill and knowledge. As an absolute minimum, a candidate should have taken one full year of calculus, including calculus of several variables, and one course in linear algebra, and should also provide evidence of additional mathematical depth. This depth can be manifested in a number of different ways including, but not restricted to, an undergraduate degree in mathematics or physical science, a high score on the mathematics portion of the GRE, or a strong undergraduate minor in mathematics. In addition, students should have some exposure to a behavioral science field. Especially useful is some experience with behavioral science modeling.

Those students interested in either the emphasis in Social Networks or the emphasis in Games, Decisions, and Dynamical Systems should make this clear in their application. A student is free at any time after admission to move into or out of either emphasis, but will be subject to the requirements in effect at the time of original admission to the concentration in Mathematical Behavioral Sciences.

GENERAL REQUIREMENTS

Four major classes of requirements must be fulfilled. Since a number of options are available, the student will, in consultation with an advisor, develop a plan of study.

Quantitative/Mathematical. To be completed by the end of the third year: (1) one course each in analysis beyond calculus, abstract algebra beyond linear algebra, and logic; and (2) two quarters of mathematical statistics, with calculus as a prerequisite and covering the fundamentals of probability and random variables.

A list of courses eligible for satisfying the Quantitative/Mathematical requirement is available online at http://www.imbs.uci.edu/NEWphdprogram.html.

Language/Computer. All students must be sufficiently familiar with various computer programs and languages to be able to conduct serious research in their field of interest and must submit either proposed courses or some demonstration of competency as part of their plan of study. In addition, students must either (1) attain proficiency in reading social science technical publications in one foreign language with a substantial relevant technical literature or (2) demonstrate proficiency in computer programming considerably beyond that of the standard computer requirement. Because of the continually changing nature of computer languages and software, the conditions for fulfilling this additional computer expertise requirement is left to the judgment of the faculty subcommittee on computers of the Ph.D. program.

Substantive Minor. Students are expected to develop considerable expertise in some substantive field and in the application of models to it. This requires the completion of three courses at the upper-division or graduate level that do not necessarily entail extensive modeling, and three courses or seminars in which the primary thrust is mathematical modeling.

Research Papers and Colloquia. At the end of the second year, a 10–20-page paper reporting original research or a penetrating analysis of some subtopic of Mathematical Behavioral Science (or either Social Networks, or Games, Decisions, and Dynamical Systems with a formal or mathematical component) is expected. An oral presentation will be given to faculty and graduate students. Two faculty members are assigned to read and evaluate the paper and talk.

Students are required to take for credit four quarters of the Mathematical Behavioral Sciences Colloquium, Social Science 211A-B-C, during their first three years. Although not a formal requirement, students are expected to attend the Colloquium on a regular basis whenever in residence.

Time to Degree. Students must advance to candidacy in their fourth year. The normative time for completion of the Ph.D. is six years. The maximum time permitted is seven years.

Emphasis in Social Networks

The requirements for the emphasis in Social Networks are the same as the general requirements noted above, with the following exceptions:

Students may choose to complete the first part of the Quantitative/Mathematical requirement with one course each in discrete mathematics, graph theory, and logic.

Social Networks students are required to attend about 75 percent of the Mathematical Behavioral Sciences Colloquia, including all that are designated as Social Networks colloquia, and also must attend occasional colloquia, usually of local faculty and graduate students, which are separate from the general Mathematical Behavioral Sciences Colloquia.

Emphasis in Games, Decisions, and Dynamical Systems

The requirements for the emphasis in Games, Decisions, and Dynamical Systems are the same as the general requirements noted above, with the following exceptions:

Students must complete eight graduate courses emphasizing game theory, decision theory, or dynamical systems. Examples of such courses are Economics 243A (Game Theory); Economics 270A-B-C (Seminar in Public Choice I, II, III); Social Science 241B (Network Theories of Social Structure); Anthropology 289A (Networks and Social Evolution); Anthropology 289B (Cognition, Technology, and Genes); and Anthropology 289C (Dynamical Processes). These courses will count toward the Substantive Minor requirement.

Students are required to attend about 75 percent of the Mathematical Behavioral Sciences Colloquia, including all that are designated as Games, Decisions, and Dynamical Systems colloquia, and must also must attend occasional colloquia, usually of local faculty and graduate students, which are separate from the general Mathematical Behavioral Sciences Colloquia.

Master of Arts Degree

The M.A. degree is awarded to UCI Ph.D. students who complete necessary requirements or to students currently enrolled in a Ph.D. program (or equivalent) at another institution who are directly admitted for graduate study leading only to the master's degree at UCI. Such applicants must provide evidence that their Ph.D. program agrees to this one-year arrangement. Requirements include the submission of a petition to the Graduate Committee along with a proposed plan of study consisting of 36 units of relevant Mathematical Behavioral Science courses, normally including the core requirement in mathematical statistics, and the satisfactory completion of a comprehensive examination.

Graduate Courses in Social Science

(Schedule of Classes **designation: Soc Sci)**

SOCIAL SCIENCES

201D Introduction to Biostatistics (2). An introduction to the principles and methods of biostatistics with application to the health sciences. Statistical concepts, terminology, and techniques employed in health science research to analyze data and report such analysis. Articles from health science research literature are used for illustration. Prerequisite: graduate standing or consent of instructor.

209A-Z Special Topics in Mathematical Social Science (4). Current research in Mathematical Social Science. Topics vary.

211A-B-C Mathematical Behavioral Sciences Colloquium (2-2-2). Weekly reports and colloquia by faculty, students, and visitors. Satisfactory/Unsatisfactory only. May be repeated for credit.

SOCIAL NETWORKS

240A-B-C Seminar in Social Networks (1.3-1.3-1.4). A seminar drawing on visiting scholars and local faculty designed to keep students abreast of current developments in Social Networks research. May be taken for credit twice.

249A Special Topics in Social Networks (4) F, W, S. Current research in Social Networks. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

SOCIOLOGY AND SOCIAL RELATIONS

FAMILY AND GENDER

253A Family and Life History (4). Interdisciplinary and comparative work in family and life history. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 221A.

253F Populations (4). Introduces the interrelationships between population and social organization. Considers measurement and explanation of historical and contemporary trends in birth rates, death rates, migration, and marriage and divorce. Case material is drawn primarily from the U.S. and other industrialized nations. Prerequisites: graduate standing, consent of instructor. Same as Sociology 262A.

SOCIAL STRUCTURE, SOCIAL ORGANIZATIONS, AND SOCIAL NETWORKS

253I Political Sociology (4). Begins with an examination of the three major orientations to the State (Pluralist, Elitist, and Class). Next considers current topics in political sociology including the Welfare State, the New Deal, political behavior, social movements, participation, and democracy. Prerequisites: graduate standing, consent of instructor. Same as Sociology 241A.

253J Social Movements (4). A survey of the field of Social Movements, oriented around critical themes in the major theoretical traditions and contemporary exemplars. Prerequisites: graduate standing, consent of instructor. Same as Sociology 240A.

253N Classical Social Theory (4). Examines the development of classical sociological theory through the writings of Karl Marx, Emile Durkheim, Max Weber, Georg Simmel, and George Herbert Mead. Prerequisites: graduate standing; consent of instructor. Same as Sociology 210A.

253R Contemporary Social Theory (4). Familiarizes students with twentieth-century developments in social thought that have influenced sociological research, suggesting "what is living and what is dead" in the "classics" and offering an overview of the main outlines of recent sociological theorizing. Prerequisites: graduate standing, consent of instructor. Same as Sociology 210B.

THIRD WORLD DEVELOPMENT AND SOCIAL CHANGE

254A Transnational Migration (4). The immigrant experience will be examined in order to explore how specific theoretical issues are examined empirically. These issues include ethnic enclave formation, gendered differences in migration and settlement, class differences, the migration of indigenous groups, identity formation, and issues of representation. Same as Anthropology 235A and Chicano/Latino Studies 215.

254H Seminar in Political Anthropology (4). Explores anthropological approaches to politics. Covers a range of issues and topics including: theories of culture, power, and hegemony; approaches to colonial and post-colonial relations of global inequality; and ethnographic approaches to the modern state. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 245A.

254J Global Urbanization (4). Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this process? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Planning, Policy, and Design 273 and Sociology 252A.

254L Approaches to Globalization (4). Historical and contemporary approaches to the world economy, emphasizing anthropological questions of culture, power, identity, inequality. Examines "neo-imperialism," "late capitalism," accumulation, global markets, urban space, the state, business and policy globalization discourse, "local" responses to and instantiations of the "global." Prerequisite: graduate standing or consent of instructor. Same as Anthropology 248A.

METHODS AND STATISTICS

255C Grant and Proposal Writing (4). Focuses on production, critique, and revision of student research proposals. A practical seminar designed to improve student proposals, help students through the application processes, and increase students' chances of obtaining support for their research. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 225A.

255M-N-P Graduate Statistics I, II, III (4-4-4). Statistics with emphasis on applications in sociology and anthropology. Examines exploratory uses of statistical tools in these fields as well as univariate, bivariate, and multivariate applications in the context of the general linear model. Prerequisites: graduate standing, consent of instructor.

SPECIAL TOPICS IN SOCIAL RELATIONS

259A Special Topics in Social Relations (1 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

MULTICULTURAL / INTERNATIONAL

272A Origin and Evolution of Marxist Social Thought (4). Focuses on the genesis and evolution of Marxist social thought. The "systemic" method of Marx and Engles to questions of economic production and reproduction is compared and contrasted with modern world-system grand visions, feminist-theoretic approaches, and postmodern critiques. Prerequisites: undergraduate course in political theory or equivalent: graduate standing or consent of instructor.

289 Special Topics in Social Science (4) F, W, S. Current research in Social Science. Topics vary. May be repeated for credit.

SPECIAL COURSES IN SOCIAL SCIENCE

290 Dissertation Research (4 to 12) F, W, S. May be repeated for credit. Prerequisite: consent of instructor.

298 Self-Directed Study (1 to 12) Summer. May not be applied toward residency requirements or toward total units required for a degree. May be repeated for credit. Prerequisite: graduate standing.

299 Independent Study (1 to 12) F, W, S. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

COLLEGE OF HEALTH SCIENCES

OVERVIEW

The UCI College of Health Sciences is comprised of the School of Medicine; the Program in Nursing Science; the Department of Pharmaceutical Sciences; and the Program in Public Health, which includes the Department of Population Health and Disease Prevention. Housed within one of the nation's top research universities, the College of Health Sciences brings together faculty, students, researchers, clinicians, and health care professions and aims to create new opportunities at the scientific frontier of many research fields to enhance the quality of education and research.

In addition to the information presented here, online information is available at http://www.cohs.uci.edu/.

DEGREES

Environmental Toxicology	M.S., Ph.D.
Genetic Counseling	M.S.
Medicine	M.D.
Nursing Science	B.S., M.S.
Pharmaceutical Sciences	B.S.
Pharmacology and Toxicology	M.S., Ph.D.
Public Health	M.P.H.
Public Health Policy	B.A.
Public Health Sciences	B.S.

In addition, the School of Medicine's basic medical science departments of Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, Pathology and Laboratory Medicine, and Physiology and Biophysics participate jointly with the School of Biological Sciences in offering graduate instruction leading to the M.S. and Ph.D. degrees in Biological Sciences.

The School of Medicine also offers the Medical Scientist Training Program (M.D./Ph.D.), the Program in Medical Education for the Latino Community (PRIME-LC), an M.D./M.B.A. program in cooperation with The Paul Merage School of Business, medical residency programs, and continuing medical education for physicians and other health care professionals.

PROGRAM IN NURSING SCIENCE

244A Irvine Hall; (949) 824-1514
E-mail: nssao@uci.edu
Ellen F. Olshansky, **Director of the Program in Nursing Science**

Faculty

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Susanne J. Phillips, F.N.P. California State University, Long Beach, *Assistant Director of the Family Nurse Practitioner Program and Health Sciences Associate Clinical Professor, Program in Nursing Science*
Julie Rousseau, Ph.D. Columbia University, *Health Sciences Assistant Clinical Professor, Program in Nursing Science*
Kathleen Saunders, M.S.N. California State University, Dominguez Hills, *Health Sciences Associate Clinical Professor, Program in Nursing Science*
Susan Tiso, M.S.N. University of California, Los Angeles, *Clinical Coordinator for the Family Nurse Practitioner Program and Health Sciences Associate Clinical Professor, Program in Nursing Science*

Undergraduate Program

Nurse professionals are members of interdisciplinary teams who work with people of all ages, cultural backgrounds, and lifestyles to help them achieve the highest level of wellness possible. The Bachelor of Science degree program in Nursing Science prepares graduates to function as generalists in professional nursing practice and to collaborate with other health care providers in clinics, hospitals, and community health settings. The undergraduate curriculum is designed to provide theory and research-based clinical practice focusing on critical thinking, human caring, and clinical expertise. Students who successfully complete the B.S. degree in Nursing Science are eligible to take the licensure examination to become a registered nurse. The Nursing Science major is approved by the Board of Registered Nursing and the Commission on Collegiate Nursing Education (CCNE).

Most of the courses required for the major require completion of prerequisites. The sample program shown is a preferred sequence that accounts for all prerequisites. Most required courses are offered in sequence and only once a year. New, transfer, and change-of-major students, therefore, ordinarily are admitted to the program once a year prior to the fall quarter. Full-time enrollment is required.

All students interested in the Nursing Science major should be aware that they will be required to do the following: (1) meet the physical and mental requirements necessary to perform nursing practice functions as outlined in Chapter 6, Article 2, Item 2725 of the *Business and Professions Code of California* (http://www.rn.ca.gov/npa/b-p.htm#2725); (2) complete a criminal background check prior to entering the clinical portion of the major in the junior year as required by health care facilities in which students will have clinical experiences; (3) purchase uniforms and other required equipment such as stethoscopes; (4) have access to transportation for off-campus clinical experiences beginning in the junior year.

Admission to the Major

Meeting the UCI admission criteria does not guarantee admission into the major. The admission process is competitive due to limited enrollment. In addition to meeting the UCI admissions criteria, all eligible applicants are required to submit a supplemental application that includes a personal statement, a résumé detailing experiences in health care, and letters of recommendation. A proctored essay and personal interview may also be required.

Freshmen: Preference will be given to those who rank the highest using the selection criteria as stated in the Admissions section of the *Catalogue.*

Transfer students: The number of transfer students that can be admitted to the major is limited and selective. Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete the following grades of B or better:

(1) one year of general chemistry with laboratory and one quarter/semester of organic chemistry; and (2) one year of biological sciences course work in addition to a course in DNA and a course in Genetics equivalent to UCI's Biological Sciences 93 and 97. Applicants must have a cumulative GPA of 3.0 or higher to be considered.

Change of Major: Due to strict limits on the number of students who can be admitted to the program and rigid sequencing of much of the upper-division curriculum, change-of-major students need to apply in the month of November for fall quarter admission for the following year. Students should contact the Nursing Science Student Affairs Office for information regarding admission to the major. Change-of-major students who are intending to apply to the Program in Nursing Science should be aware that the Program in Nursing Science cannot waive course prerequisites for any School of Biological Sciences or School of Physical Sciences courses. As such, change-of-major students must adhere to the course prerequisites that these Schools have established and have published in the course descriptions that appear in the *Catalogue*. Change-of-major information is also available at http://www.changeofmajor.uci.edu.

HONORS AT GRADUATION

Honors at graduation, e.g., *cum laude, magna cum laude, summa cum laude,* are awarded to approximately the top 12 percent of the graduating seniors. To be eligible for honors, a general criterion is that students must have completed at least 72 units in residence at a University of California campus. Other important factors are considered (see page 52).

REQUIREMENTS FOR THE B.S. DEGREE IN NURSING SCIENCE

University Requirements: See pages 55–62.

Major Requirements

Chemistry 1A-B-C, 1LB-1LC, and 51A; Biological Sciences 93, 97, 98, 99, E109, and M122; Mathematics 7/Statistics 7 or Statistics 8 or equivalent; and Nursing Science 100, 100L, 110, 112LA-LB, 114, 118, 120, 120L, 125, 130, 130L, 135, 140, 140L, 150, 150L, 160, 160L, 170, 170L, 175LA-LB, 179A, and 179B.

In addition to the courses offered by the Program in Nursing Science, the following courses are included in the required minimum grade point average for continuation in and graduation from the Nursing Science major: Biological Sciences 93, 97, 98, 99, E109, M122; Chemistry 1A-B-C, 1LB-LC, 51A; Mathematics 7/Statistics 7 or Statistics 8.

Sample Program — Nursing Science

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Psychology 7A[1]	Sociology 1[1]	Economics 1[1]
Bio. Sci. 93	Writing 39B[2]	Writing 39C[2]
Gen. Ed./Elective	Gen. Ed./Elective	Gen. Ed./Elective
		SUMMER
		Nur. Sci. 40[3]
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A	Math. 7/Stats. 7 or Stats. 8[5]	Bio. Sci. M122
Philosophy 1[4]	Philosophy 4[4]	Philosophy 5[4]
	Gen. Ed./Elective	Gen. Ed./Elective
Junior		
Bio. Sci E109	Nur. Sci. 112LB	Nur. Sci. 120, 120L
Nur. Sci. 100, 100L	Nur. Sci. 114	Nur. Sci. 140, 140L
Nur. Sci. 110	Nur. Sci. 118	
Nur. Sci. 112LA	Nur. Sci. 125	
Senior		
Nur. Sci. 130, 130L	Nur. Sci. 135	Nur. Sci. 170, 170L
Nur. Sci. 150, 150L	Nur. Sci. 160, 160L	Nur. Sci. 175LB
Nur. Sci. 150	Nur. Sci. 175LA	Nur. Sci. 179B[6]
Nur. Sci. 150L	Nur. Sci. 179A	

[1] Courses recommended to complete the Social and Behavioral Sciences general education requirement. Other approved courses are available.

[2] Courses recommended to complete the lower-division writing requirement. Other approved courses are available.

[3] Elective open to any student interesting in knowing more about nursing and the health professions.

[4] Courses recommended to complete the Arts and Humanities general education requirement. Other approved courses, such as the Humanities Core course, are available.

[5] Any of these courses or an equivalent course.

[6] Satisfies the upper-division writing requirement.

Graduate Program

MASTER OF SCIENCE IN NURSING SCIENCE

The Master of Science (M.S.) in Nursing Science at the University of California, Irvine is a professional degree program which will prepare Registered Nurses in selected specialties and in research so they may assume roles as research-based advanced practice clinicians, administrators, or educators. The program course work is designed to prepare nurses with (1) expertise in a specialized area of advanced nursing practice; (2) role preparation as a nurse practitioner, nurse educator, or nurse administrator; (3) leadership and health policy skills; and (4) research skills. The M.S. degree will also prepare students for future doctoral work.

ADMISSION

Applicants must have earned a bachelor's degree in nursing from an accredited program, currently be licensed as a Registered Nurse in the State of California, and provide proof of licensure by the California Board of Registered Nursing (BRN). In addition, eligible candidates must have a 3.0 cumulative grade point average, have completed a course in descriptive and inferential statistics, and have at least one year direct clinical experience in patient care.

Applicants must meet the general admission requirements of the UCI Graduate Division and the Program in Nursing Science admission requirements, and submit both the Application for Graduate Study and the Nursing Science Supplemental Application in order to be considered for admission. The GRE is not required. Students are admitted every fall quarter.

M.S. SPECIALIZATION AREAS

Students applying to the M.S. program must select an area of specialization, either the Family Nurse Practitioner track (FNP) or the Adult/Geriatric Nurse Practitioner track (A/GNP). Graduates of the nurse practitioner (NP) tracks will also be eligible for certification by the California Board of Registered Nursing (BRN).

REQUIREMENTS

Students enrolled in the FNP track will complete 72 units. Students enrolled in the A/GNP track will complete 72 units. Students will complete 720 hours of clinical practice with populations in their area of specialization to be eligible for certification. There is no foreign language requirement; proficiency in a language other than English is desirable but not required.

Required and Elective Courses for Both Tracks

Nursing Science 200, 210, 215, 225A, 225B, 230, 230L, 245A-B, 250, 260A-B, 281, 282, 283, 284, 285, 286, 287, 288.

Required for FNP Track only: Nursing Science 255, 270.
Required for A/GNP Track only: Nursing Science 280.
Recommended Course: Nursing Science 295.

There are no qualifying examinations. Successful completion of required course work will advance students to candidacy the quarter prior to scheduled completion of the master's degree program. Instead of a thesis, students complete a Scholarly Concentration in an area of interest over the final two quarters of the program and prepare a major paper. The comprehensive examination will serve as a final examination which will also prepare graduates for certification examinations. Full-time students are expected to complete the program within two years or three years for part-time students.

Courses in Nursing Science

(Schedule of Classes **designation: Nur Sci)**

LOWER-DIVISION

40 Introduction to Nursing and Health Care (2). Lecture, two hours. Introduction to roles and responsibilities of health care professionals, health care regulations, professional licensure, legal issues, ethics, and cultural competence in health care. Beginning competence in interviewing, communication, and selected physical examination skills. Emphasis on professional role development.

UPPER-DIVISION

100 Human Anatomy (4). Lecture, four hours. Human microscopic and gross anatomy emphasizing anatomical structure and basic structure-function relationship. Corequisite: Nursing Science 100L. Prerequisite: Biological Sciences 99.

100L Human Anatomy Laboratory (2). Laboratory, six hours. Human microscopic and gross anatomy laboratory emphasizing anatomical structure and basic structure-function relationships. Corequisite: Nursing Science 100.

110 Frameworks for Professional Nursing Practice (4). Lecture, four hours. Conceptual frameworks for professional practice. Scope of professional nursing, jurisprudence and ethics, professional interpersonal relationships, and health care delivery systems in the context of the social, political, and economic environments. Socialization of the student for professional roles in nursing.

112LA-LB Foundations of Professional Practice (2-2). Lecture, two hours; laboratory, six hours. Development of skills in communication, interviewing, functional and physical health assessment across the life span, the art and science of human care, and clinical judgment. Prerequisites: Nursing Science 100; Biological Sciences E109 (may be taken concurrently with Nursing Science 112LA).

114 Applied Pharmacology (4). Lecture, four hours. Principles of pharmacology applied to intervention in pathophysiologic states across the life span. Discussion of major drug groups with implications for monitoring, drug administration, toxicity, and patient education. Prerequisites: Nursing Science 100, Biological Sciences E109.

118 Human Health and Disease (4). Lecture, four hours. Pathologic alterations in physiologic processes in cells, tissues, organs, and systems across the life span. Emphasis on critical thinking, application of concepts to clinical practice, and related research. Prerequisites: Nursing Science 100, Biological Sciences E109.

120 Adult Health Care (4). Lecture, four hours. Restorative, perioperative, and supportive care of adults with acute or chronic alterations in oxygenation, regulation, immune response, elimination, metabolism, mobility, cognition, and/or substance abuse. Emphasis on critical thinking, related research, sociocultural influences, and ethics. Corequisite: Nursing Science 120L. Prerequisites: Nursing Science 112LB, 114, 118, 125.

120L Adult Health Care Practicum (4). Discussion, one hour; laboratory, 11 hours. Supervised clinical synthesis of knowledge and nursing skill related to adult health. The practicum occurs in hospital inpatient units, surgical and perioperative units, and outpatient clinics in which adults receive restorative, perioperative, or supportive care. Corequisite: Nursing Science 120.

125 Research Methods and Applications in Health Care (4). Lecture, four hours. Foundational concepts of research in health care. Emphasizes critical evaluation and interpretation of research for application in practice. Prerequisite: basic statistics course.

130 Family and Child Health Care (5). Lecture, five hours. Biopsychosocial and cultural aspects of normal and high-risk antepartum, intrapartum, and postpartum care of women, families, and their newborns. Restorative, perioperative, and supportive care of infants and children and their families in health, acute illness, chronic illness, and disability. Corequisite: Nursing Science 130L. Prerequisite: Nursing Science 120.

130L Family and Child Health Care Practicum (5). Discussion, one hour; laboratory, 14 hours. Supervised clinical synthesis of knowledge and nursing skill related to family and child health care. The practicum occurs in maternity and pediatric hospital inpatient units, surgical and perioperative units, and outpatient prenatal and pediatric clinics. Corequisite: Nursing Science 130.

135 Older Adult Health Care (2). Lecture, two hours. Theories of aging and application of principles of gerontology in health maintenance of older adults. Concepts and principles of rehabilitation and palliative care. Prerequisite: Nursing Science 120.

140 Human Behavior and Mental Health Care (4). Lecture, four hours. Biopsychosocial and cultural influences on the promotion and restoration of mental health in adults and adolescents. Affects of acute and chronic substance/drug abuse. Assessment, classification, and restorative/supportive care of adults and adolescents with acute and chronic mental health problems. Corequisite: Nursing Science 140L. Prerequisite: Nursing Science 112LB.

140L Human Behavior and Mental Health Care Practicum (4). Discussion, one hour; laboratory, 11 hours. Supervised clinical synthesis of knowledge and nursing skill related to human behavior and mental health care. The practicum occurs in adult and adolescent outpatient mental health clinics and inpatient psychiatric units. Corequisite: Nursing Science 140.

150 Critical and Speciality Health Care (2). Lecture, two hours. Interventions for restorative and supportive care of individuals with life-threatening alterations in health status. Discussion of technology and pharmacology for life support. Includes biological, psychological, and sociocultural aspects of critical illness and injury. Corequisite: Nursing Science 150L. Prerequisite: Nursing Science 120.

150L Critical and Speciality Health Care Practicum (2). Discussion, one hour; laboratory, five hours. Supervised clinical synthesis of knowledge and nursing skill related to critical and specialty health care. The practicum occurs in hospital emergency rooms and critical care units as well as surgical and perioperative units. Corequisite: Nursing Science 150.

160 Leadership and Management in Health Care (4). Lecture, four hours. Principles, concepts, and theories related to organizations, management, leadership, change, decision-making, and group process applied to the delivery of health care and role of professional nurse as leader and manager of a health team. Corequisite: Nursing Science 160L. Prerequisite: Nursing Science 150.

160L Leadership and Management in Health Care Practicum (4). Discussion, one hour; laboratory, 11 hours. Principles, concepts, and theories related to organizations, management, leadership, change, decision-making, and group process applied to the delivery of health care and role of professional nurse as leader and manger of a health team. Corequisite: Nursing Science 160.

170 Community-based Health Care (4). Lecture, four hours. Epidemiology, primary health care, disease prevention, and health promotion applied to nursing care of individuals, families, groups, aggregates, and communities. Sociocultural, political, economic, and environmental influences. Concepts and methods of assessing populations and communities. Corequisite: Nursing Science 170L. Prerequisite: Nursing Science 160.

170L Community-based Health Care Practicum (4). Discussion, one hour; laboratory, 11 hours. Supervised clinical synthesis of knowledge and nursing skill in a variety of community-based settings. Opportunities for analysis of sociocultural, political, economic, and environmental influences on community-based health care and development of community health/action programs. Corequisite: Nursing Science 170. **(IX)**

175LA-LB Clinical Preceptorship (2-2). Laboratory, six hours. Independent study focusing on in-depth clinical nursing practice in a selected area of interest to the student. Students are mentored by a preceptor who is an expert clinician in the area. Prerequisite: Nursing Science 150.

179A Scholarly Concentration I (2). Research, six hours. Independent study focusing on the research process to provide the evidence basis for a nursing protocol in an area of interest to the student. Prerequisite: Nursing Science 150.

179B Scholarly Concentration II (4). Lecture, one hour; seminar, one hour; research, six hours. Continuation of independent research with emphasis on preparation of a paper detailing the research process and findings. Prerequisites: Nursing Science 179A; satisfactory completion of the lower-division writing requirement.

GRADUATE

200 Research Methods and Evaluation for Evidence-Based Practice (3). Lecture, three hours. Clinical research methods and evaluation procedures relevant to evidence-based advanced nursing practice. Prerequisite: undergraduate statistics course; undergraduate nursing research course.

210 Advanced Pathophysiology (3). Lecture, three hours. Principles of normal body functioning and pathophysiologic changes that occur as a result of compensatory mechanisms and disease. Physical and psychological aspects of altered health are explored from the cellular to the level of the total body system.

215 Health Promotion/Disease Prevention (3). Lecture, three hours. Covers the evidence-based national clinical preventive services guidelines for health promotion and disease prevention. Emphasizes counseling about personal health behaviors, screening tests for the early detection of risk factors and disease, immunizations and chemo-prophylaxis.

225A-B Advanced Pharmacology (2-3). Lecture, three hours. Principles of pharmacology that serve as a foundation for the pharmacotherapeutic management of patients evaluated and treated by advanced practice nurses. Emphasis includes the application of pharmacokinetic and pharmacodynamic principles.

230 Advanced Health and Physical Assessment (3). Lecture, three hours. Application of theoretical concepts related to comprehensive health assessment of patients across the life span. Analysis, synthesis, and application of comprehensive health assessment data. Corequisite: Nursing Science 230L.

230L Advanced Health and Physical Assessment Laboratory (1). Laboratory, one hour. Clinical laboratory course for the application of concepts related to comprehensive health assessment of patients across the life span. Corequisite: Nursing Science 230.

245A-B Primary Care (3-3). Lecture, three hours. Assessment and management of acute or episodic problems affecting patients and families across the life span. Diagnostics, pharmacology, pathophysiology, and therapeutics are integrated. Prerequisites: Nursing Science 210 and 230.

250 Primary Care Women's Health (3). Lecture, three hours. Primary health care needs of women including adolescent, adult, and aging adults. Emphasizes assessment, diagnosis, prevention, management, and education of common gynecologic and family planning health care needs. Prerequisites: Nursing Science 210 and 230.

255 Primary Care Obstetrics (3). Lecture, three hours. Assessment and management of women during pregnancy. Diagnostics, pharmacology, pathophysiology, and therapeutics are integrated. Includes assessment, differential diagnosis, management, patient/family education, and counseling related to normal antepartum care. Prerequisites: Nursing Science 210 and 230.

260A-B Primary Care Adult/Geriatrics (3-3). Lecture, three hours. Assessment and management of acute or episodic problems affecting adult and geriatric patients and their families. Diagnostics, pharmacology, pathophysiology, and therapeutics are integrated. Prerequisite: Nursing Science 245B. Formerly Nursing Science 260.

270 Primary Care Pediatrics (3). Lecture, three hours. Assessment and management of acute or episodic problems affecting pediatric patients and their families. Diagnostics, pharmacology, pathophysiology, and therapeutics are integrated. Prerequisite: Nursing Science 245B.

280 Aging and Chronic Illness (3). Lecture, three hours. Assessment and management of the geriatric patient. Diagnostics, pharmacology, pathophysiology, and therapeutics are integrated. Includes assessment, differential diagnosis, management, patient/family education, and counseling related to aging. Prerequisite: Nursing Science 260.

281 Frameworks for Advanced Professional Practice in Nursing (3). Lecture, three hours. Provides an orientation to the scope and standards of advanced professional nursing practice. Principles of jurisprudence, ethics, and advocacy are introduced along with conceptual frameworks for nursing practice.

282 Human Behavior and Mental Health Care for Advanced Practice (3). Lecture, three hours. Focuses on theory and research related to the psychiatric illness and sociocultural factors such as race, ethnicity, gender, and class which may impact patients across their life span. Emphasis includes assessment, diagnosis, management, patient/family education, lifestyle modification, and counseling strategies.

283 Primary Care Procedures (3). Lecture, two hours; laboratory, one hour. Introduces the theoretical basis for common procedures performed in primary care clinical practice. Focus includes EKG interpretation, x-ray interpretation, minor surgery, and orthopaedic procedures. Prerequisite: Nursing Science 245B.

284 Advanced Practice Scholarly Concentration (3). Lecture, three hours. Independent study focusing on critique, analysis, and synthesis of research evidence as a basis for advanced practice nursing in an area of interest to the student. Prerequisite: Nursing Science 200.

285 Advanced Practice Nursing Practicum I (3). Laboratory, nine hours. Clinical application of theory and research related to the advanced assessment and health promotion of patients across the life span. Prerequisites: Nursing Science 210 and 230.

286 Advanced Practice Nursing Practicum II (4). Laboratory, 12 hours. Clinical field study applying theory, research, and developing clinical skills related to the provision of care to patients and their families, including gynecology and family planning in increasingly complex clinical situations. Prerequisite: Nursing Science 285.

287 Advanced Practice Nursing Practicum III (5). Laboratory, 15 hours. Clinical application of theory and research through clinical experiences in selected primary care settings designed to provide students with competencies in the assessment, diagnosis, management, and education/counseling in selected populations. Prerequisite: Nursing Science 286.

288 Advanced Practice Nursing Practicum IV (6). Laboratory, 18 hours. Clinical practicum applying theory, research, and developing clinical skills related to the care of adult and elderly patients and their families diagnosed with acute or chronic health care problems in primary care settings. Prerequisite: Nursing Science 287.

289 Advanced Practice Nursing Practicum V (6). Laboratory, 18 hours. Culminating clinical experience serves as a transition from the student role to that of the advanced practice nurse. Prerequisite: Nursing Science 288.

295 Directed Study in Latino Health Care (2 to 4). Independent study in Latino health care. Prerequisite: Nursing Science 286; Spanish language skills.

DEPARTMENT OF PHARMACEUTICAL SCIENCES

147 BSA; (949) 824-1239
http://www.cohs.uci.edu/pharm.shtml
A. Richard Chamberlin, **Department Chair**

Faculty

Rommie Amaro, Ph.D. University of Illinois at Urbana, *Assistant Professor of Pharmaceutical Sciences*

Bruce Blumberg, Ph.D. University of California, Los Angeles, *Professor of Developmental and Cell Biology, Biomedical Engineering, and Pharmaceutical Sciences*

A. Richard Chamberlin, Ph.D. University of California, San Diego, *Department Chair and Professor of Pharmaceutical Sciences, and Professor of Chemistry and Pharmacology*

Olivier Civelli, Ph.D. Swiss Institute of Technology, *Professor of Pharmacology, Developmental and Cell Biology, and Pharmaceutical Sciences, and Eric L. and Lila D. Nelson Chair in Neuropharmacology*

Celia Goulding, Ph.D. King's College London, *Assistant Professor of Molecular Biology and Biochemistry and of Pharmaceutical Sciences*

Stephen Hanessian, Ph.D. Ohio State University, *Director of the Graduate Program in Medicinal Chemistry and Pharmacology and Professor of Pharmaceutical Sciences, Chemistry, and Pharmacology*

Mahtab Jafari, Pharm.D. University of California, San Francisco, *Assistant Professor of Pharmaceutical Sciences, Ecology and Evolutionary Biology, and Pharmacology*

Young Jik Kwon, Ph.D. University of Southern California, *Assistant Professor of Pharmaceutical Sciences and of Chemical Engineering and Materials Science*

Andrej Luptak, Ph.D. Yale University, *Assistant Professor of Pharmaceutical Sciences and of Molecular Biology and Biochemistry*

Thomas L. Poulos, Ph.D. University of California, San Diego, *UCI Chancellor's Professor, Departments of Molecular Biology and Biochemistry, Pharmaceutical Sciences, Physiology and Biophysics, and Chemistry*

Rainer K. Reinscheid, Ph.D. Center for Molecular Neurobiology, *Associate Professor of Pharmaceutical Sciences, Pharmacology, and Molecular Biology and Biochemistry*

Paolo Sassone-Corsi, Ph.D. University of Naples, *Department Chair of Pharmacology and UCI Distinguished Professor, Departments of Pharmacology, Microbiology and Molecular Genetics, and Pharmaceutical Sciences*

Shiou-Chuan (Sheryl) Tsai, Ph.D. University of California, Berkeley, *Associate Professor of Molecular Biology and Biochemistry, Chemistry, and Pharmaceutical Sciences*

Xiaolin Zi, Ph.D. Shanghai Medical University, *Associate Professor, Departments of Urology and Pharmaceutical Sciences*

The Department of Pharmaceutical Sciences, established in 2007, offers a curriculum focusing on the strengths required to prepare students for professional positions in the pharmaceutical production, control, and development sectors of the pharmaceutical and biotechnology industry or for graduate studies in pharmaceutics, medicinal chemistry, pharmacology, analytical chemistry, medicine, and pharmacy. Collaborative interdisciplinary research will be supported by joint faculty appointments shared with other UCI departments.

Undergraduate Program

The B.S. degree program in Pharmaceutical Sciences trains students in a multidisciplinary approach so that they can contribute to the advancement of new pharmaceutical technologies such as accelerated chemical synthesis, molecular-based assays using cloned enzymes and cloned metabolizing enzymes, combinatorial chemistry, *in vitro* biopharmaceutical techniques, and gene therapies. Pharmaceutical scientists are rapidly changing the field of drug discovery and development. The graduates of this program may seek employment in public and private sectors or choose to pursue graduate degrees such as a Ph.D., M.D., or Pharm.D.

NOTE: The Division of Undergraduate Education's Undecided/Undeclared Advising Program is coordinating the undergraduate affairs activities and providing student advising for the Department of Pharmaceutical Sciences. For further information call (949) 824-6987.

Undergraduate Honors. Honors at graduation, e.g., *cum laude, magna cum laude, summa cum laude,* are awarded to approximately the top 12 percent of the graduating seniors. To be eligible for honors, a general criterion is that students must have completed at least 72 units in residence at a University of California campus. Other important factors are considered (see page 52).

REQUIREMENTS FOR THE B.S. DEGREE IN PHARMACEUTICAL SCIENCES

University Requirements: See pages 55–62.

Major Requirements

A. *Lower-Division Requirements:*

1. Chemistry 1A-B-C or H2A-B-C, 1LB-1LC or H2LB-LC or M2LB-LC; Chemistry 51A-B-C, 51LA-LB or H52A-B-C, H52LA-LB.
2. Mathematics 2A-B and one course selected from Statistics 7, 8, Mathematics 2D, 2J, or 7.
3. Physics 3A-B-C, 3LB-LC or 7C-D-E, 7LC-LD.
4. Biological Sciences 93, 94, 97, 98, 99.

B. *Upper-Division Requirements:* Biological Sciences 100L, 194S, E109, Pharmaceutical Sciences 170A, 170B, 171, 172, 173, 174, 174L, 176, 177, 177L.

C. *Upper-Division Electives (11 units):*

1. One course to be selected from upper-division laboratories: Biological Sciences D111L, E112L, M114L, M116L, M118L, M122L, M124L, N113L, Chemistry 128L, 138, 151L, 156, 160, 170, 170L.
2. One course, for students who choose electives that have these courses as prerequisites, selected from Biological Sciences D103, D104, N110.
3. The remaining elective units may be selected from Biological Sciences D111L, D126, D129, D136, D137, D145, D148, D151, D153, E112L, E136, E137, E141, E142, E189, M114, M114L, M116L, M118L, M120, M121, M122, M122L, M123, M124A, M124B, M124L, M125, M128, M137, M143, M144, N113L, N153, N154, N171, Chemistry 107, 107L, 125, 128, 128L, 138, 151, 151L, 156, 160, and 170, Public Health 121. (Course may not be used to satisfy more than one requirement.)

NOTE: Students may not double major in Pharmaceutical Sciences and Public Health Sciences, or with any of the School of Biological Sciences majors.

Sample Program — Pharmaceutical Sciences

FALL	WINTER	SPRING
Freshman		
Bio. Sci. 93	Bio. Sci. 94	Chemistry 1C, 1LC
Chemistry 1A	Chemistry 1B, 1LB	Math. 2A
WR 39B or Hum. 1A	WR 39C or Hum. 1B	Gen. Ed. or Hum. 1C
Gen. Ed.	Gen. Ed.	Gen. Ed.
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA	Chemistry 51B, 51LB	Bio. Sci. 100L
Math. 2B	Stats. 7 or 8 or	Chemistry 51C
Bio. Sci. 194S	Math. 2D or 2J or 7	Gen. Ed.
	Gen. Ed.	
Junior		
Bio. Sci. E109	Pharm. Sci. 170A	Pharm. Sci. 170B
Pharm. Sci. 172	Physics 3B, 3LB	Pharm. Sci. 173
Physics 3A	U-D PS Elective	Physics 3C, 3LC
U-D PS Elective	Gen. Ed.	U-D PS Elective
Senior		
Pharm. Sci. 171	Pharm. Sci. 177, 177L	Pharm. Sci. 176
Pharm. Sci. 174, 174L	Gen. Ed.	Elective
Gen. Ed.	Elective	Elective
		Elective

Graduate Program

The Gateway Program in Medicinal Chemistry and Pharmacology (MCP) was established through the joint efforts of the Departments of Chemistry, Pharmacology, Molecular Biology and Biochemistry, and Pharmaceutical Sciences. Students in this interdisciplinary program will benefit from the participation of the highly reputed faculty within each of the participating departments. Active research programs in Chemistry include the synthesis of organic molecules and macromolecules of therapeutic significance that cover a large cross-section of chemical and biological space. Faculty in Pharmacology have research programs in areas relevant to pharmaceutical pharmacology, especially neuropharmacology. Molecular Biology and Biochemistry faculty enjoy active research in structural biology and drug design. Participating faculty in Pharmaceutical Sciences have interests in a variety of programs with a direct impact on health sciences.

The MCP program provides students with state-of-the-art practical and theoretical training in their specific field of interest, while also providing a broader exposure to fundamentals of each of the other

core disciplines. This dual goal is accomplished through a one-year initial interdisciplinary program of course work and lab rotations, followed by the transition into one of the participating department's Ph.D. programs for in-depth specialization and research work. The integrated curriculum offered in this program gives students a breadth of expertise that is not easily achievable in any single, individual department.

In consultation with their advisors, MCP students create a program tailored to their own interests. Individualized programs will be designed to fulfill the MCP requirements as well as provide students with the preparation necessary for transition into their eventual home department. Students who successfully complete this one-year gateway program and who achieve an advisory relationship with a faculty member who is affiliated with one of the participating departments, will transition into their home department to complete the remaining degree requirements. Following successful completion of all departmental requirements, students will receive their degree from the department of their chosen advisor, and earn a Ph.D. in either Chemistry, Biological Sciences, or Pharmacology and Toxicology. A Ph.D. degree in Pharmaceutical Sciences is not currently offered.

The Medicinal Chemistry and Pharmacology Gateway Program offers a unique opportunity to graduate students who wish to pursue careers in all aspects of drug discovery and development in the pharmaceutical industry or in academia.

Courses in Pharmaceutical Sciences

***(Schedule of Classes* designation: PhrmSci)**

LOWER-DIVISION

1 Introduction to Pharmaceutical Sciences (1) S. Lecture, one hour. Introduction to the scientific disciplines that comprise the multidisciplinary field of pharmaceutical sciences. Students gain an appreciation of basic concepts in the relevant physical, biological, and clinical sciences and how they fit together in the search for new medicines. Pass/Not Pass only.

UPPER-DIVISION

170A Molecular Pharmacology I (4) W. Lecture, three hours; discussion, one hour. Molecular basis of drug-receptor action at the molecular and cellular levels. Structure-function of drug targets emphasizing enzymes, ion channels, and membrane transport proteins. Understanding how the drugs' mechanisms of action contribute to the development of more efficacious and safer drugs. Corequisite or prerequisite: Chemistry 51C or H52C. Prerequisite: Biological Sciences E109. Formerly Pharmaceutical Sciences M170A.

170B Molecular Pharmacology II (4) S. Lecture, three hours; discussion, one hour. Mechanism-based overview of pharmacology and therapeutic drugs in the fields of autonomic nervous system, central nervous system, and antimicrobials. Prerequisite: Pharmaceutical Sciences 170A. Formerly Pharmaceutical Sciences M170B.

171 Physical Biochemistry (4) F. Lecture, three hours; discussion, one hour. Thermodynamics and kinetic fundamentals as applied to problems relevant to pharmaceutical sciences such as receptor/enzyme-ligand interactions. Fundamentals of biophysical methods used in the pharmaceutical sciences including structure determination and biomolecular spectroscopy. Prerequisites: Mathematics 2B, Physics 3C, Chemistry 1C or H2C, and Biological Sciences 99. Formerly Pharmaceutical Sciences M171.

172 Topics in Pharmaceutical Sciences (2) F. Lecture, two hours. Presents information about various fields of research, study, careers, and graduate school opportunities in pharmaceutical sciences. Taught by guest lecturers from various disciplines including 199 research course faculty. Helps Pharmaceutical Sciences students select electives appropriate to their future goals. Corequisite or prerequisite: Chemistry 51C or H52C. Prerequisite: Biological Sciences 99. Pass/Not Pass only. Formerly Pharmaceutical Sciences M172.

173 Pharmacotherapy (4) S. Lecture, three hours; discussion, one hour. An exploration of the clinical application of medications to selected disease states. Focus is on an understanding of underlying principles of pharmacology and how this knowledge can be applied to treatment of diseases. Corequisite or prerequisite: Pharmaceutical Sciences 170B. Formerly Pharmaceutical Sciences M173.

174 Biopharmaceutics (4) F. Lecture, three hours; discussion, one hour. Introduces theories and tools of new drug formulations. Particularly new novel therapeutics based on biological materials, pathological characteristics utilized to achieve the maximum efficacy and specificity, and drug delivery systems are extensively discussed. Prerequisite: Pharmaceutical Sciences 170B or consent of instructor. Formerly Pharmaceutical Sciences M174.

174L Biopharmaceutics Lab (3) F. Laboratory, five hours; discussion, one hour. Introduction to cancer drug screening using cellular models and confirmation of comprehensive therapeutic efficacy using a live animal model. Includes basic cell culture, cytotoxicity assays, cell analysis, drug circulation test, and tumor eradiction and imaging experiments. Prerequisite: Pharmaceutical Sciences 170B or consent of instructor. Formerly Pharmaceutical Sciences M174L.

176 Bioethics (4) S. Lecture, three hours; discussion, one hour. Discusses the ethical and social responsibilities of the pharmaceutical scientist and entrepreneur. Issues explored include animal experimentation, clinical trials, medicine, and economics as they are related to pharmaceutical sciences and drug discovery and development. Formerly Pharmaceutical Sciences M176.

177 Medicinal Chemistry (4) W. Lecture, three hours; discussion, one hour. An introduction of the basics of drug activity and mechanisms. Strategies used to identify lead compounds such as natural product chemistry, combinatorial chemistry, molecular modeling, and high-throughput screening. Relationship of molecular structure to pharmacological activity. Corequisite: Pharmaceutical Sciences 177L. Prerequisites: Chemistry 51A-B-C or equivalent, and Biological Science 98 or Chemistry 128. Same as Chemistry 177.

177L Medicinal Chemistry Laboratory (2) W. Laboratory, four hours. Laboratory accompanying Pharmaceutical Sciences 177. Corequisite: Pharmaceutical Sciences 177. Prerequisites: Chemistry 51A-B-C or equivalent, and Biological Science 98 or Chemistry 128. Same as Chemistry 177L.

GRADUATE

223 Biological Macromolecules (4). Introduction to nucleic acid and protein structure, dynamics, and function. Topics include analytical methods, molecular evolution, folding, and catalysis. Same as Chemistry 223.

250A-B-C Current Topics in Pharmaceutical Sciences (1-1-1) F, W. S. Intended to expose students to the primary literature and current research in the field of Pharmaceutical Sciences. Students analyze and present information for discussion. Guest speakers from academia and industry may participate throughout the quarter. Prerequisite: enrollment in the MCP Gateway Program or consent of instructor. Satisfactory/Unsatisfactory only.

277 Medicinal Chemistry (4) W. Fundamentals of medicinal chemistry covering diverse aspects of drug design, discovery, synthesis, and development. Molecular basis of drug action with an emphasis on the structure-to-function continuum.

280 Graduate Research (1 to 12) F, W. S. Supervised original research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

399 University Teaching (1 to 4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory only. May be repeated for credit.

PROGRAM IN PUBLIC HEALTH

The Program in Public Health was established in 2003 to provide institutional focus for existing academic strengths in various subdisciplines of public health and to facilitate well-grounded education and innovative research in emerging cross-disciplinary topics in the field. Undergraduate degree programs in public health began enrolling students in 2006, and the Department of Population Health and Disease Prevention was established in 2007 to advance the collaborative interdisciplinary mission of public health research and education. The Department offers a B.S. in Public Health Sciences, a B.A. in Public Health Policy, a minor in Public Health, and a Master of Public Health (M.P.H.) in three emphases: Environmental Health, Epidemiology, and Sociocultural Diversity and Health. Information regarding the Program in Public Health's future plans is available at http://www.publichealth.uci.edu.

DEPARTMENT OF POPULATION HEALTH AND DISEASE PREVENTION

http://www.publichealth.uci.edu
Oladele Ogunseitan, **Department Chair**

Faculty

Alpesh Amin, M.D., M.B.A. Northwestern University, *Interim Chair, Department of Medicine; Executive Director, Hospitalist Program; Chief, Division of General Internal Medicine; and Professor of Clinical Medicine, Department of Medicine (Hospitalist Program and General Internal Medicine) and Program in Public Health*

Scott M. Bartell, Ph.D. University of California, Davis, *Assistant Professor of Public Health*

Hans-Ulrich Bernard, Ph.D. University Göttingen, *Professor of Molecular Biology and Biochemistry and of Public Health*

Zuzana Bic, Dr.P.H. Loma Linda University, *Lecturer with Potential Security of Employment, Public Health*

Tim-Allen Bruckner, Ph.D. University of California, Berkeley, *Assistant Professor of Public Health and of Planning, Policy, and Design*

Ralph W. Cygan, M.D. State University of New York Downstate Medical Center, *Health Sciences Clinical Professor, Department of Medicine (General Internal Medicine) and Program in Public Health*

Rufus Edwards, Ph.D. University of Medicine and Dentistry of New Jersey and Rutgers, The State University of New Jersey, *Assistant Professor of Public Health*

Chad P. Garner, Ph.D. Oxford University, *Associate Professor and Associate Professor in Residence of Epidemiology and Public Health*

Lisa Grant Ludwig, Ph.D. California Institute of Technology, *Associate Professor of Public Health*

F. Allan Hubbell, M.D., M.S.P.H. Baylor University College of Medicine, *Senior Associate Dean for Academic Affairs, School of Medicine, and Professor, Department of Medicine (General Internal Medicine) and Program in Public Health*

Cynthia Lakon, Ph.D. University of North Carolina, Chapel Hill, *Assistant Professor of Public Health*

Shahram Lotfipour, M.D. University of Iowa, *Health Sciences Associate Clinical Professor, Department of Emergency Medicine and Program in Public Health*

Frank L. Meyskens, Jr., M.D. University of California, San Francisco, *Director of the Chao Family Comprehensive Cancer Center; Professor, Departments of Medicine (Hematology/Oncology), Biological Chemistry, and Program in Public Health; and Daniel G. Aldrich, Jr. Endowed Chair*

Michael J. Montoya, Ph.D. Stanford University, *Assistant Professor of Anthropology, Chicano/Latino Studies, and Public Health*

Andrew Noymer, Ph.D. University of California, Berkeley, *Assistant Professor of Sociology and Public Health*

Oladele Ogunseitan, Ph.D. University of Tennessee, *Department Chair of Population Health and Disease Prevention and Professor of Public Health and of Environmental Health, Science, and Policy*

Sharon Stern, Ph.D. University of Utah, *Senior Lecturer with Security of Employment, Public Health*

Daniel Stokols, Ph.D. University of North Carolina, *UCI Chancellor's Professor of Planning, Policy, and Design; Psychology and Social Behavior; Public Health; and Environmental Health, Science, and Policy*

Roberto Tapia-Conyer, M.D., M.P.H., M.Sc., Dr.Sc. Universidad Nacional Autonoma de Mexico, *Adjunct Professor of Public Health*

David Timberlake, Ph.D. University of California, San Diego, *Assistant Professor of Public Health and Epidemiology*

Lari Wenzel, Ph.D. Arizona State University, *Professor of Medicine (General Internal Medicine) and Public Health*

Jun Wu, Ph.D. University of California, Los Angeles, *Assistant Professor of Public Health and Epidemiology*

Guiyun Yan, Ph.D. University of Vermont, *Professor of Public Health and of Ecology and Evolutionary Biology*

The mission of the Department of Population Health and Disease Prevention is to use interdisciplinary approaches in research, education, and community outreach for creating, integrating, and translating population-based knowledge into preventive strategies to reduce the societal burden of human disease and disability. This is a forward-thinking mission that acknowledges and complements, but does not compete with, traditional discipline-based research and training in public health. It is a specific mission that is increasingly recognized by eminent organizations such as the Institute of Medicine's Board on Population Health and Public Health Practice (formerly known as the Board on Health Promotion and Disease Prevention [HPDP]), by research and education funding institutions such as the Robert Wood Johnson Foundation's Health & Society Scholars Program, and by distinguished Schools of Public Health.

New sources of funding for research and education are emerging, including the translational science initiative of the National Institutes of Health, to support this ecological model of public health. The societal challenges facing health care and the burden of diseases at the national and international levels have increased the demand for experts capable of researching, developing, and implementing programs to prevent disease and to improve population health. The Department aims to host activities that bridge disciplinary perspectives, methods, and practices to nurture new leaders in public health.

Degrees

Public Health Policy ..... B.A.
Public Health Sciences ..... B.S.
Public Health ..... M.P.H.
(with emphases in Environmental Health; Epidemiology; and Sociocultural Diversity and Health)

HONORS

Honors at graduation, e.g., *cum laude, magna cum laude, summa cum laude*, are awarded to about 12 percent of the graduating seniors. Eligibility for such honors will be on the basis of grade point average (GPA). A minimum overall GPA of 3.5 is required for consideration. Students must have completed at least 72 units in residence at a University of California campus by the end of the final quarter prior to graduation. The student's cumulative record at the end of the final quarter is the basis for consideration for awarding Latin honors. Other important factors are considered (see page 52).

Undergraduate Program

The B.S. in Public Health Sciences and the B.A. in Public Health Policy degree programs train students in multidisciplinary approaches to public health practice and research. The degrees explore both quantitative and qualitative aspects of public health at all levels of analysis. Graduates will advance, through selective employment or further education, to become the new generation of public health professionals prepared to face the emerging challenges to human health from a population perspective using cutting-edge prevention approaches.

Students who are interested in pursuing a premedical program should note that additional courses will be needed beyond the requirements of the public health degrees to fulfill requirements for medical school.

Students considering the public health degrees should carefully evaluate their academic preparation and career goals before enrolling in either the B.S. or B.A. degree program. Changing from one degree program to the other is possible, but will require completion of the required lower- and upper-division courses specified for each program. It is also possible for a student to enroll in both the B.S. and B.A. degree programs (double major), provided the student completes all the requirements outlined under each degree.

The Department also offers an undergraduate minor.

CAREERS FOR THE MAJORS

For graduates with bachelor's degrees who wish to enter the job market directly, there is a plethora of opportunities in private agencies and public organizations for entry-level personnel in public health. These include statewide and regional health care agencies (e.g., the Orange County Health Care Agency), community clinics

focusing on preventive health, water and air quality management districts, biomedical companies, health-education institutions, and activist non-governmental organizations. The National Association of County and City Health Officials (http://www.naccho.org) has produced a compendium of public health career paths, many of which have become even more compelling for graduates at the bachelor's level.

In addition to supplying practitioners for the entry-level workforce in public health, the undergraduate degrees will also prepare students to enter graduate programs in public health. Information about public health careers can be obtained through the Council on Education for Public Health (http://www.ceph.org) and the Association of Schools of Public Health (http://www.whatispublichealth.org).

PRACTICUM

A major part of the undergraduate curriculum in Public Health is its practicum requirement. Practicum is designed to facilitate hands-on experience for public health majors at agencies and/or laboratories dedicated to public health practice while also linking tutorials on the development of excellent writing and communication skills on contemporary public health topics. Students select an approved practicum placement site on- or off- campus, depending on their declared concentration area. Unlisted or inappropriate placements, as well as those that could give the appearance of nepotism or preferential treatment, will not be approved. Approval for practicum will be determined by the Practicum Director.

Practicum is open only to upper-division Public Health students who are in good academic standing and have completed all prerequisite course work. Practicum must be taken for a letter grade. Further information, including practicum sign-up procedures and prerequisites can be obtained at http://www.publichealth.uci.edu.

ADMISSION TO THE MAJORS

Freshmen: There are no specific requirements for admission at the freshman level, however completion of a college preparatory high school curriculum including two years of high school biology, a combination of natural science courses including one year each of mathematics and chemistry, and courses in health science and social sciences will be helpful. Grades of B or better are recommended in all these preparatory courses.

Transfer students: Junior-level applicants with the highest grades overall and who satisfactorily complete lower-division requirements will be given preference for admission to the Public Health majors. All applicants to the B.S. degree in Public Health Sciences must have a minimum overall GPA of 3.0 and a minimum GPA of 3.0 in required courses, and must complete one year of general biology and one year of general chemistry with laboratory, and one year of courses equivalent to UCI's Biological Sciences 93 and 97. All applicants to the B.A. degree in Public Health Policy must have a minimum overall GPA of 3.0 and a minimum GPA of 3.0 in required courses, and complete one year of courses in anthropology, economics, sociology, and/or psychology.

REQUIREMENTS FOR THE B.S. DEGREE IN PUBLIC HEALTH SCIENCES

University Requirements: See pages 55–62.

School Requirements: None

Major Requirements

A. **Lower-Division Requirements:** Public Health 1 and 2; Chemistry 1A-B-C and 1LB-LC, 51A-B-C and 51LA-LB; Biological Sciences 93, 94, 97, 98, 99; Mathematics 2A-B plus Mathematics 7, Statistics 7, or Statistics 8; three Social and Behavioral Science courses, with at least two in the same discipline selected from the following:

Psychology: Psychology and Social Behavior 9, 11A, 11B, 11C, *or* Psychology 7A, 9A, 9B, 9C (these courses are cross-listed)
Sociology 1, 2, 3
Economics 1, 13, 20A, 20B
Anthropology 2A, 2B, 2C
Political Science 6C, 31A, 51A
Environmental Analysis and Design E8

B. **Upper-Division Requirements:** Public Health 101; two courses from Biological Sciences D103, D104, E109, N110; five additional upper-division courses chosen from two topic areas with at least one course in either topic area:

Epidemiology and Genetics: Biological Sciences D137, D148*, D153*, D187*, E106, M123*, M137; Public Health 102–119.

Environmental and Global Health Sciences: Anthropology 125B, 128B; Biological Sciences E189, 191A-B*, 191C*; Chemistry 125; Environmental Analysis and Design E127; Earth System Science 112*; Public Health 160–179.

Infectious Diseases: Public Health 180–189; Biological Sciences 100L*, 124, D143, E136*, E176, M114, M114L*, M116*, M116L*, M118L*, M121*, M121L*, M122, M122L*, M124A-B*, M125, M137.

* Note additional prerequisites.

Public Health 100 may also be taken to fulfill upper-division course work.

C. **Practicum Requirement:** Public Health 195 (8 units), taken for upper-division writing credit.

NOTE: Students may not double major in Public Health Sciences and Pharmaceutical Sciences, or with any of the School of Biological Sciences majors or minors.

REQUIREMENTS FOR THE B.A. DEGREE IN PUBLIC HEALTH POLICY

University Requirements: See pages 55–62.

School Requirements: None

Major Requirements

A. **Lower-Division Requirements:** Public Health 1 and 2; three courses from Biological Sciences 9A, 9D, 9J, 10, 12B, 12D, 25, 30, 45, 50, 93, 94; Mathematics 2A-B plus Mathematics 7, Statistics 7, or Statistics 8; three Social and Behavioral Science courses, with at least two in the same discipline selected from the following:

Psychology: Psychology and Social Behavior 9, 11A, 11B, 11C, *or* Psychology 7A, 9A, 9B, 9C (these courses are cross-listed)
Sociology 1, 2, 3
Economics 1, 13, 20A, 20B
Anthropology 2A, 2B, 2C
Political Science 6C, 31A, 51A
Environmental Analysis and Design E8

B. **Upper-Division Requirements:** Public Health 101, 122, and 144; seven additional upper-division courses with at least two courses in each topic area selected from the following:

Health Policy and Management: Criminology, Law and Society C121, C126, C148; Economics 123A-B-C*, 124A*; Management 101*, 107**, 160*; Planning, Policy, and Design 102, 111, 133*, 137, 167, 168, 169*, Political Science 171A*; Public Health 120–139.

Social and Behavioral Health Sciences: Anthropology 133A, 134A, 134D, 134E; Planning, Policy, and Design 112, 151; Psychology and Social Behavior 101D, 102C, 103H, 110D, 111D,

112D, 113D, 114D, 116D, 117D, 136H, 137H, 138H, 151C, 152C, 153C*, 154C*, 155C*, 178S*; Public Health 140–159.

* Note additional prerequisites.

**Open only to students enrolled in the Management minor or with consent of instructor.

Public Health 100 may also be taken to fulfill upper-division course work.

C. **Practicum Requirement:** Public Health 195 (8 units), taken for upper-division writing credit.

MINOR IN PUBLIC HEALTH

The minor in Public Health provides students with the fundamental knowledge of principles, applications, and skills needed to develop a firm appreciation of health and disease prevention at the population level, and to use this special knowledge to transform the experience of their major education into innovative approaches for solving problems in health care and assessment.

Teaching and learning. Public Health education demands interdisciplinary engagement. The minor curriculum is intended to engage students from majors across the campus by introducing them to the main concepts and branches of public health, while also giving them the skills and values needed to translate their major education into meaningful projects in population health assessment and disease prevention. In concert with the major degrees in public health, the minor emphasizes learning through the ecological model of public health where the linkages and relationships among multiple determinants affecting health are examined to identify critical nodes of opportunities to improve the health of populations at various scales of analysis.

Research. Public Health education is most firmly embedded in knowledge systems through research and practice. The minor curriculum requires a period of directed or special studies where students have the opportunity to translate their didactic knowledge into tangible projects within the rubric of public health practice.

Service. Public Health education also demands community engagement. All students of Public Health are encouraged to incorporate public health impacts and benefit assessments into societal functions that ground their understanding of public problems. Experience in public health service may be acquired through participation in learning opportunities and by reflecting critically on those experiences under the auspices of vigorous campus organizations such as the Public Health Association (http://pha.zotters.org/).

Requirements for the Minor

Nine courses are required (36 units), no more than two of which may be taken on a Pass/Not Pass basis, distributed as follows:

A. Public Health 1 and 2.

B. Six upper-division courses in Public Health with at least one from each of four subject-cluster areas as follows:

Epidemiology and Genetics (Public Health 101–119)
Health Policy and Management (Public Health 120–139)
Social and Behavioral Health Science (Public Health 140–159)
Environmental and Global Health Science (Public Health 160–179)
Infectious Diseases (Public Health180–189)

C. Four units of Public Health 198 (Directed Studies) or Public Health 199 (Special Studies) or equivalent, working on topics demonstrably related to public health research and/or practice.

The courses selected to fulfill this requirement must have Public Health number designations. Petitions to use alternative courses will be considered on a case-by-case basis.

No more than two courses may overlap between the student's major degree and the minor in Public Health.

Residence Requirement: A minimum of six courses required for the minor must be completed at UCI. Approved courses taken in the Education Abroad Program are considered to be in-residence courses.

Graduate Program

MASTER OF PUBLIC HEALTH

The distinctive mission of the UCI M.P.H. program is to create a motivated cadre of public health professionals who are prepared to implement effective strategies for reducing the burden of disease and disability in culturally diverse communities, and who are primed to draw from their broad training in the global dimensions of public health principles to lead and work collaboratively on precise assessments of health-risk factors and on the management of evidence-based prevention strategies.

In addition to meeting all the training requirements in the core competency subjects recommended by the Association of Schools of Public Health (ASPH), students enrolled in the UCI M.P.H. program will have the opportunity for in-depth pursuit of one out of three emphasis areas: Environmental Health, Epidemiology, or Sociocultural Diversity and Health. The M.P.H. is a 60-unit program. A full-time student must enroll in at least 12 units per quarter. Part-time enrollment is also allowed. To maintain residency, part-time students must enroll in four to eight units per quarter. All students are required to complete 240 hours of fieldwork at an approved public health practicum site.

Further information may be obtained from the Public Health Web site, http://www.publichealth.uci.edu, or by calling (949) 824-7095 or sending e-mail to suiga@uci.edu.

CAREER INFORMATION

Graduates of the UCI M.P.H. program will find employment in both public and private agencies committed to preventing disease and promoting health in all aspects of society. Earning a graduate degree gives new professionals a competitive edge over students who complete their education at the bachelor's degree level. In particular, the curriculum of the M.P.H. program at UCI is specifically designed to create students who can combine knowledge of the five core disciplines in public health with leadership, communication, and problem-solving skills to meet the needs of culturally diverse communities. Earning an M.P.H. degree will allow graduates to pursue supervisory positions and career advancement opportunities that may be unattainable without an advanced degree. Students may also wish to combine an M.P.H. with a clinical degree in the health professions to increase opportunities for employment.

Course work in the M.P.H. program can also prepare a student to pursue doctoral programs in public health. The Ph.D. is a research-based degree that prepares the candidate for research and teaching positions in institutions of higher education. The Dr.P.H. is a professional degree that prepares candidates for careers as practitioners in high-level administration or teaching. UCI does not currently offer these degrees, but a proposal for a Ph.D. program is under review. More information about careers and graduate school in public health can be obtained through the Association of Schools of Public Health (http://www.whatispublichealth.org) and the Council of Education for Public Health (http://www.ceph.org).

GENERAL ADMISSION REQUIREMENTS

The M.P.H. program accepts students for the fall quarter only. Students are encouraged to begin the application process early to facilitate the timely submission of the application. The deadline for receipt of all application materials for the M.P.H. program is January 15. There are no specific course prerequisites needed to enroll, and the program is open to students with bachelor's degrees in a

variety of disciplines. Individuals from diverse cultural, geographic, and socioeconomic backgrounds are encouraged to apply.

To be eligible to apply for the M.P.H. program, applicants must meet certain minimum academic requirements. Applicants must hold a bachelor's degree from an accredited academic institution, have earned a minimum grade point average of 3.0 (B average) in undergraduate course work, and possess strong verbal and quantitative skills as reflected by Graduate Record Examination (GRE) General Test scores. Applicants may also submit standardized test scores from the MCAT, GMAT, or LSAT in lieu of the GRE. If the applicant has, from a UC-equivalent university, a Ph.D. in a health-related field, a medical degree, or is currently enrolled in medical school, a test score must be submitted, but the test score's date does not need to be within the validity period. Evaluations of applicant files for admission to the M.P.H. program will consist of an assessment of transcripts of previous academic work, standardized graduate admission test scores, statement of purpose, letters of recommendation, and other relevant qualifications. Applicants must choose one of the three available emphases at the time of application. For more information on admissions, visit http://www.publichealth.uci.edu or contact suiga@uci.edu.

PROGRAM REQUIREMENTS

The M.P.H. is a 60-unit degree program consisting of fourteen courses taken over five quarters. Eight courses must be taken by all students. In addition, students choose three courses in their emphasis and three elective courses.

Required Courses. All students begin the program with a four-unit introductory course in the foundations of public health. The five core competency courses, each of which is four units, are Public Health Statistics, Environmental Health Science, Epidemiology, Health Policy and Management, and Health Behavior Theory. Students must also complete at least two quarters of the Graduate Seminar for two units each quarter, and the Graduate Practicum in Public Health (eight units).

Emphasis Courses. Three courses (four units each) in one of the three emphases are required. Students choose their emphasis at the time of application and select courses with the help of a faculty mentor in that emphasis.

Elective Courses. Three elective courses (four units each) are required. Students select electives in light of their educational and career goals.

Practicum. Students are required to complete a supervised internship of 240 hours while registered in the Graduate Practicum in Public Health (PubHlth 295). The practicum experience follows the first three academic quarters of study in public health, the completion of all core competency courses, and advancement to candidacy. A compendium of approved practicum sites is available online to enrolled M.P.H. students. The student's work at the practicum site is expected to culminate in the preparation and submission of a substantive manuscript suitable for publication, a detailed proposal for research, or a public health program implementation.

Comprehensive Examination. A two-part comprehensive examination will be administered by the faculty of the student's area of emphasis in the spring quarter. Part one consists of a written proctored examination on the core competency areas and the cross-disciplinary themes of public health. Part two consists of a synthesis paper on a contemporary topic in the student's area of emphasis. Students must pass both parts of the examination before they can be advanced to candidacy for the M.P.H. degree.

For students enrolled full-time, the normative time for completion of the M.P.H. degree is six quarters, and the maximum time permitted is nine quarters. For students enrolled part-time, the normative time is nine quarters, and the maximum is fifteen quarters.

Courses in Public Health

(Schedule of Classes **designation: PubHlth)**

LOWER-DIVISION

1 Principles of Public Health (4). Lecture, three hours. Introduces the major concepts and principles of public health and the determinants of health status in communities. Emphasizes the ecological model that focuses on the linkages and relationships among multiple natural and social determinants affecting health.

2 Case Studies in Public Health Practice (4). Lecture, three hours. Presents case studies in various themes of public health practice to demonstrate how the principles of public health were established and continue to evolve. Prerequisite: Public Health 1.

30 Human Environments (4). Lecture, three hours. Study of natural and physical components of earth's environmental problems due to human activities. Topics include global air, water, soil, biodiversity, rainforests, energy, demographics, agriculture, and urbanization. Theme is sustainability. Integrated into the science are social, legal, and economic considerations. **(II)**

60 Environmental Quality and Health (4). Lecture, three hours. A survey of how pollution in the natural and physical environment affects human health. Topics are toxicology, epidemiology, risk assessment, water, food, air, radiation, pesticides, solid and hazardous waste. Included are interdisciplinary elements of environmental regulations, environmental education, consumer protection. **(II)**

80 AIDS Fundamentals (4). Lecture, three hours; discussion, one hour. Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, risk reduction, and how the community can respond. Same as Biological Sciences 45. **(II)**

90 Natural Disasters (4). Lecture, three hours. Natural disasters are natural processes that adversely affect humans. By examining these processes students develop a basic understanding of Earth's physical environment. Topics include: tectonics, earthquakes, volcanoes, landslides, severe weather, flooding, climate change, mass extinctions and impacts with space objects. **(II)**

UPPER-DIVISION

100 Special Topics in Public Health (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Public Health 1 and in some cases, consent of the instructor. May be repeated for credit as topics vary.

EPIDEMIOLOGY AND GENETICS

101 Introduction to Epidemiology (4). Lecture, three hours; laboratory, one hour. The distribution of disease and injury across time, space, and populations. Covers basic concepts and methods of descriptive epidemiology including the natural history of disease, demography, public health interventions, models, measurement, sources of data, and indices of health. Prerequisite: Mathematics 7, Statistics 7, or Statistics 8, or equivalent. Formerly Public Health 101A.

102 Social Epidemiology (4). Lecture, three hours. Overviews evidence linking environmental factors to mental and physical disorders including such variables as socioeconomic status, income inequality, work stress, job loss, social capital, location, and other demographic characteristics. Considers measurement and research design issues of both the individual and aggregate levels. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; Social Ecology 10; Social Ecology 13 or equivalent. Same as Psychology and Social Behavior 183S.

103 Introduction to Genetic Epidemiology (4). Lecture, three hours. Examines the methodological approaches for studying the importance of genetic factors and gene-environment interactions in human diseases. Topics include: genetic and epidemiological concepts, population studies, family studies, and applications in medicine and public health. Prerequisite: Public Health 101.

104 Analytic and Applied Epidemiology (4). Lecture, three hours; laboratory, one hour. Covers basic concepts of analytic epidemiology and applications, including experimental and observational designs, prevention, screening, treatment and rehabilitation, infectious disease, and injury prevention. Prerequisite: Public Health 101. Formerly Public Health 101B.

119 Special Topics in Epidemiology and Genetics (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Public Health 1 and in some cases, consent of the instructor. May be repeated for credit as topics vary.

HEALTH POLICY AND ADMINISTRATION

120 Nutrition and Global Health (4). Lecture, three hours. Global issues related to nutrition and public health. Evaluation of nutritional risk factors associated with the development of chronic diseases and the role of nutritional medicine in prevention. Topics include food safety, communicable diseases, supplements, and regulatory issues.

121 Introduction to Complementary and Alternative Medicine (4). Lecture, three hours. Examines health and disease in contemporary American culture and society with definitions, models, and practices of what has come to be known as "orthodox" or "conventional" medicine. Selected "alternative" or "complementary" modes of promoting health and well-being including homeopathy, herbology, and chiropractic. Formerly Environmental Analysis and Design E172.

122 Health Policy (4). Lecture, three hours. Considers social and economic aspects of health and disease in the United States. What are the proper roles of the individual, community, and government in improving health and health care? International comparisons will be made wherever possible. Same as Planning, Policy, and Design 170.

123 Public Issues in Biotechnology (4). Lecture, three hours. An assessment of developments in biotechnology potentially affecting various facets of human society, or warranting significant public debate. Covers the implications of genetic engineering and other biotechnological developments for public health, environment, agriculture, legislation, research ethics, public policy, and commerce. Prerequisites: Public Health 1 and 2 or consent of instructor.

124 Environmental and Public Health Policy (4). Lecture, three hours. Examines factors involved in shaping public health and environmental policy. Topics include the role of science in public health policy, the function of governmental regulatory agencies, citizen participation, and economic and sociopolitical aspects of controlling infectious diseases and regulating carcinogens.

134 Asian American Community Public Health (4). Lecture, three hours. Focuses on major issues and concepts of community health and their application to public health programs for Asian American populations. Analyzes individual, institutional, community, and policy factors that influence a person's health status within a larger environmental context. Same as Asian American Studies 134. **(VII)**

139 Special Topics in Health Policy and Administration (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Public Health 1 and in some cases, consent of the instructor. May be repeated for credit as topics vary.

SOCIAL AND BEHAVIORAL HEALTH SCIENCE

140 Beliefs, Attitudes, and Health Behaviors (4). Lecture, three hours. Examines health-relevant beliefs, attitudes, and behaviors from a social psychological perspective. Topics include: self-control; obesity; sexual behavior; medication errors, stress, perceived control and social support; happiness and well-being; changing health attitudes and behaviors; self-disclosure and health. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Psychology and Social Behavior 181S.

141 Clinical Health Psychology (4). Lecture, three hours. Role of behavior in etiology, treatment, and prevention of certain diseases. Behavioral intervention including biofeedback, stress-, pain-management, health habit counseling, and other skills to assist patients make cognitive, emotional, and behavioral changes needed to cope with disease or achieve better health. Prerequisite: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent. Same as Psychology and Social Behavior 141H.

142 The Human Pain Experience (4). Lecture, three hours. Examines the physiological and sociocultural correlates of human pain perception. Emphasis on laboratory and clinical methods of measuring acute and chronic pain; social influences on the experience and communication of pain; biopsychosocial approaches to pain control. Prerequisites: Psychology and Social Behavior 9 or 11C, or Psychology 7A or 9C, or equivalent; and any upper-division course from the Health or Pre-clinical Psychology areas.

143 Social Ecology of Health Promotion (4). Lecture, three hours. Core themes of Social Ecology are examined as they apply to major areas of health promotion research and practice. Students attend lectures and work collaboratively on team projects conducted in university and community settings. Prerequisite: consent of instructor. Same as Social Ecology 131.

144 Health Behavior Theory (4). Lecture, three hours. Introduces theoretical perspectives from the social sciences to understand health behavior from the vantage point of individuals, their interpersonal contacts, communities, and ecological contexts. Application of theory to public health problems is a central focus.

145 Gender, Biology, and Environmental Ethics (4). What is "nature" and how do we know and represent it? Introduces students to the history of "nature" produced within scientific knowledge, as well as historical developments. Previous lower-division course work in Women's Studies is recommended, but not required. Same as Women's Studies 165A.

147 Drug Abuse and Its Prevention (4). Lecture, three hours. Theoretical and practical underpinnings of drug abuse and its prevention at the individual and population levels. Students practice developing drug abuse prevention schemes for specific populations. Recent developments in pharmacological and biobehavioral theories of drug dependence are explored.

148 Public Health Communication (4). Lecture, three hours. Theoretical underpinnings and practical applications of communication sciences in public health practice. Techniques of effective communication, including fear appeal and deterrence; social marketing; public-private partnerships; health service delivery; and outreach in rural and urban settings, and for international health strategies. Prerequisites: Public Health 1 and 2.

151 Environmental Psychology (4). Lecture, three hours. Impact of the physical environment on individual and group behavior. Three basic concerns examined: (a) environmental determinants of behavior at the individual and interpersonal level; (b) social planning and urban design; and (c) methodological approaches to the study of environmental issues. Prerequisites: Environmental Analysis and Design E8, Social Ecology 10, or Planning, Policy, and Design 4. Same as Planning, Policy, and Design 151 and Psychology and Social Behavior 171S.

159 Special Topics in Social and Behavioral Health Science (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Public Health 1 and in some cases, consent of the instructor. May be repeated for credit as topics vary.

ENVIRONMENTAL AND GLOBAL HEALTH SCIENCE

160 Environmental Pollution and Remediation (4). Lecture, three hours. The study of pollution—its identification, risks, and remediation. Analysis of sources of natural and anthropogenic environmental pollutants using ecological concepts, chemical fate and transport, engineering technologies, economics, and policy to provide understanding and solutions to these problems. Prerequisite: upper-division standing or consent of instructor. Formerly Environmental Analysis and Design E103.

161 Environmental Geology (4). Lecture, three hours; discussion, one hour. Introduction to geologic principles and applications to environmental problems. Topics include: tectonic processes, earth materials, soils, river processes, groundwater, the coastal environment, slope failures, seismic hazards, mineral resources, and land-use evaluation based on geologic conditions. Examples from case studies. Prerequisite: Environmental Analysis and Design E1, E3, or E8. Formerly Environmental Analysis and Design E110.

162 Human Ecology of Health (4). Lecture, three hours. Many human health problems are directly associated with ethnicity, sex, and age. Course integrates the science of these issues with anthropology, geography, economics to understand the relationship, management, treatment. Involves lectures and discussions to probe these factors.

163 Environmental Health Science (4). Lecture, three hours. Focuses on processes of exposure to environmental toxins/agents and their impact to human health and the environment. Media transport, exposure assessment, susceptibility, behavior, and health effect of several toxins are discussed. Formerly Environmental Analysis and Design E115.

164 Toxic Chemicals in the Environment (4). Lecture, three hours. Explores the sources, transformation, and sinks of toxic chemicals in the environment, and their effects on public health. Covers regulatory issues and design-for-the-environment initiatives to reduce or eliminate the adverse effects of toxic chemicals Prerequisites: Public Health 1 and 2 or consent of instructor.

164L Toxic Chemicals in the Environment Laboratory (4). Laboratory, three hours. Covers field sampling techniques and laboratory analysis methods for assessing the occurrence and effects of toxic chemicals in environmental compartments, including water, soils, sediments, air, and food resources. Prerequisite or corequisite: Public Health 164. Prerequisites: Public Health 1 and 2 or consent of instructor.

165 Issues in Potable Water Reuse (4). Lecture, three hours. Provides an in-depth study of the treatment and subsequent reuse of wastewater for drinking. Analyzes existing regulations for both drinking water and reuse situations, microbial and chemical contaminants, health concerns and risk assessment. Prerequisite: Environmental Analysis and Design E8. Formerly Environmental Analysis and Design E163.

166 Geographic Information Systems (4). Lecture, one and one half hours; laboratory, one and one half hours. Basic geographic, cartographic, and GIS concepts including computer representation of physical, political, statistical, and social aspects of space using vector and grid-based maps. Experience with extensive geographic base map files and databases through use of GIS software (ArcView 3.x). Same as Criminology, Law and Society C148.

167 Air Pollution, Climate, and Health (4). Lecture, three hours. Introduction to how air pollutants are emitted into the atmosphere, how people are most exposed to air pollutants in developed and developing areas, physical and meteorological processes that affect transport, and the influence of air pollutants on global warming.

168 Nuclear Environments (4). Lecture, three hours. Understanding the impact of the nuclear age on the environment and human health through the interrelated developments of nuclear power and nuclear weapons. The early years of weapon development, catastrophic environmental pollution, perils of nuclear power in the U.S. and Russia. Same as Environmental Analysis and Design E127 and International Studies 122. **(VIII)**

169 Indirect Methods in Human Exposure Assessment (4). Lecture, three hours. Indirect methods in estimating human exposure to environmental agents. Topics include air, noise, dermal and ingestion exposure assessment, time-activity and micro-environmental approach, uncertainty and variability analysis, and the use of GIS and remote sensing in exposure assessment.

173 Health and Global Environmental Change (4). Lecture, three hours. Overview of scientific underpinnings of global environmental change and human health consequences. Provides students with an understanding of the fundamental dependency of human health on global environmental integrity. Encourages disciplinary cross-fertilization through interaction of students in environmental, health, and policy sciences. Prerequisite: at least one upper-division course in environmental science, public health, environmental policy, and/or environmental management, or consent of instructor.

179 Special Topics in Environmental and Global Health Science (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Public Health 1 and in some cases, consent of the instructor. May be repeated for credit as topics vary.

INFECTIOUS DISEASES

189 Special Topics in Infectious Diseases (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Public Health 1 and in some cases, consent of the instructor. May be repeated for credit as topics vary.

GENERAL TOPICS

195 Public Health Practicum (8). Lecture, three hours; discussion, one hour; fieldwork, 10 hours. Provides direct opportunities for Public Health majors to observe and participate in public health activities and/or research; and to cultivate skills for verbal and written communication of contemporary public health topics. Prerequisites: Public Health 1 and 2; satisfactory completion of the lower-division writing requirement; upper-division Public Health majors only. **(IX)**

198 Directed Studies (1 to 4). Prerequisite: Public Health 1. May be repeated for credit as topics vary.

199 Special Studies (1 to 4). Prerequisites: consent of instructor and upper-division standing. May be repeated for credit as topics vary.

GRADUATE

200 Foundations of Public Health (4). Presents the overarching framework, principles, and core responsibilities of public health research and practice from a multidisciplinary perspective. Provides necessary foundation for further studies toward advanced cross-cutting approaches essential for public health practice. Prerequisite: graduate standing or consent of instructor.

201 Cancer Epidemiology (4). Concentrates on understanding how epidemiology plays a role in the search for cancer etiology, prevention, control, and treatment; gives an overview of cancer research with an appreciation of the multidisciplinary nature of the field. Prerequisites: Public Health 203; graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E250/Epidemiology 201.

202 Genetic Epidemiology (4). Concentrates on the role of genetic factors in the etiology of disease in human populations with an objective of disease control and prevention, and the role of interactions of genetic factors and environmental exposures in the occurrence of disease. Prerequisites: Public Health 203; graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E251/Epidemiology 202.

203 Environmental Health Sciences III: Epidemiology (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease in the general population, as these approaches apply to populations using different student designs and models from the literature. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E226/Epidemiology 203.

204 Environmental Health Sciences V: Biostatistics (4). Designed to help students develop an appreciation for the statistician's view of the research process, emphasizing biomedical research. Instills an understanding of how statistical models are used to yield insights about the data that form evidence-based understanding of the world around us. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E227/Epidemiology 204.

205 Advanced Epidemiologic Methods (4). Advanced topics in the design and statistical analysis of epidemiologic studies. Topics include simulation methods, counter-matching and multiphase study designs, missing data, and Bayesian analysis. Published simulation studies are discussed and replicated using the R software package. Prerequisite: Public Health 101B or Statistics 111 or Statistics 211 or consent of instructor. Same as Epidemiology 217.

206 Graduate Epidemiology in Public Health (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease in the general populations, as these approaches apply to populations using different student designs and models from the literature. Prerequisite: graduate standing or consent of instructor.

220 Public Health Cost-Effectiveness Analysis (4). Examines using cost-effectiveness information to allocate limited resources to maximize health benefits to a population; defining and measuring cost, survival, and health-related quality of life; and how to calculate cost-effectiveness using decision trees and Markov simulation models. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E228, Planning, Policy, and Design 226, and Psychology and Social Behavior P228.

221 Health Promotion and Planning (4). Focuses on health and health care in the United States, but discussion of global health issues and/or international comparisons will be made whenever possible. Considers both the social and economic aspects of health and disease. Prerequisite: graduate standing or consent of instructor. Same as Planning, Policy, and Design 241.

240 Topics in Environmental Health Promotion and Education (4). Focuses on design of intervention strategies dependent on the environmental agent, exposure to assessment, SES, health effects, stakeholders, and support base. Programmatic design includes media selection, communication/education, and pre/post surveys. Analysis of transborder and local environmental health promotion programs. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E254.

241 Environmental Policy and Global Sustainability (4). Seminar organized around four transcendent questions: does the world value sustainability, what challenges must be met to move toward it, what are the roots of inequality, and is capitalism compatible with sustainability. Prerequisite: graduate standing or consent of instructor. Same as Social Ecology 250.

259 Special Topics in Social and Behavioral Health Sciences (4). Current research in Social and Behavioral Health Sciences. Topics vary from quarter to quarter. May be repeated for credit as topics vary. Prerequisite: graduate standing or consent of instructor.

260 Coastal Ecosystem Health (4). Examines the causes of coastal ecosystem degradation and strategies to restore the ecosystem balance or to prevent further coastal ecosystem health degradation. Prerequisite: graduate standing or consent of instructor. Same as Ecology and Evolutionary Biology 275 and Environmental Health, Science, and Policy E205.

261 Environmental Hydrology (4). Provides an overview of the occurrence, distribution, and movement of water in the environment. Quantitative methods are introduced for analyzing hydrologic processes. Human impacts on water distribution and quality are considered. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E230.

262 Earthquakes and Seismic Hazard (4). Provides an overview of earthquakes and introduction to seismic hazard. Topics include characteristics and effects of earthquakes, sources of earthquakes, seismic hazard assessment, introduction to earthquake loss estimation and mitigation. California examples are emphasized. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E231.

263 Seminar in Paleoseismology (4). Provides an introduction to paleoseismology and its applications. Topics include data collection methods, data analysis, earthquakes in different tectonic environments, and applications to seismic hazard assessment and fault characterization. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E232.

264 Environmental Health Sciences I: Introduction to Environmental Health Science (4). Convergence of agents (chemical, physical, biological, or psychosocial) in the environment can emerge as diseases influenced by social, political, and economic factors, allowing them to become rooted in society. How these agents from various spheres come together and impact human health. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E224/Epidemiology 264.

265 Environmental Health Sciences II: Advanced Environmental Health Science (4). Explores the complex relationships among exposure processes and adverse health effects of environmental toxins focusing on specific chemicals, sources, transport media, exposure pathways, and human behaviors. Techniques of environmental sampling for exposure assessment are discussed. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E225/Epidemiology 265.

266 Remediation of Environmental Pollutants (4). Topics include sources of natural and anthropogenic environmental pollutants using ecological concepts, chemical fate and transport, engineering and biological remediation technologies, economics, policy to provide understanding and solutions to these problems. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E253.

267 Potable Reuse (4). Provides an in-depth study of the treatment and subsequent reuse of wastewater for drinking. Analyzes existing regulations for both drinking water and reuse situations, microbial and chemical contaminants, hydrogeology, health concerns, and risk assessment. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E263.

268 Environmental Health Science IV: The Lead Case (4). The social ecology of lead use and presence in subsistence goods and the environment, examined from earliest prehistory to the present. Lead has specific health impacts throughout human development. Public policy and surveillance are discussed. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E293.

269 Air Pollution, Climate, and Health (4). Emission of air pollutants into the atmosphere, physical and meteorological processes that affect transport, and influence on global warming. Concepts of how and where people are most exposed, and how exposures and health effects differ in developed and developing regions. Same as Environmental Health, Science, and Policy E247 and Epidemiology 269.

270 Human Exposure to Environmental Contaminants (4). Introduces founders of conceptual thought that environmental contaminants can impact health. Theory and principles of exposure assessment, the continuum from emissions of a contaminant into the environment to evidence of health effects in a population. Same as Environmental Health, Science, and Policy E248/ Epidemiology 270.

271 Health Impacts of Environmental Change (4). Seminar on health impacts of environmental change at various scales of analysis. Uses numerical models such as "MIASMA" and "TARGETS" to analyze alternative outcomes of environmental-change scenarios. Presentations from experts are featured. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E245.

272 Environmental Health and Quality (4). Concepts and principles of environmental health. Focuses on industrial hygiene, water and air quality, noise pollution, and environmental carcinogens. Discusses theory and implementation practices through review of legislative measures and enforcement procedures. Examines social and biological interactions surrounding each topic. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E283.

273 Seminar in Environmental Health, Science, and Policy (2). Topics relevant to the field of environmental health, science, and policy are covered in depth. Included are: hazardous and biological pollutants in soil, water, air; remediation technologies; water conflicts; and regulations pertaining to contaminants. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E285.

274 Grant Writing in Environmental Health Sciences Seminar (4). Teaches graduate students fundamentals of grant writing through introduction to funding sources, the missions of these sources, and how differences in mission statements translate into different goals within a proposal. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E290.

276 Toxic Chemicals in the Environment (4). Industrial ecology of toxicants and their impacts on environmental quality and human health. Explores theoretical basis of toxicity thresholds and regulatory issues. Uses classic and contemporary research articles to understand the legacy of traditional toxicants, and to identify emerging threats. Prerequisite: graduate standing or consent of instructor. Same as Epidemiology 244.

280 Global Burden of Disease (4). Introduces composite measures of disease burden, including Disability Adjusted Life Years and their use in prioritizing disease burden at local, regional, and global levels. Focuses on WHO's landmark assessments and introduces DISMOD software for specific analyses. Prerequisite: graduate standing or consent of instructor.

281 Infectious Disease Epidemiology (4). Covers geographical distribution of infectious diseases and the health and disease risk in diverse human populations. Introduces basic methods for infectious disease epidemiology and case studies of important diseases. Includes surveillance, outbreak investigation, emerging pathogens, traditional and molecular epidemiology. Prerequisite: graduate standing or consent of instructor.

290 Special Topics in Public Health (4). Varying topics in the field of Public Health. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

291A-B-C Graduate Seminar: Advances and Challenges in Public Health (2-2-2). Forum for exploring recent advances and challenges in all disciplines of public health research and practice. Features case studies exemplifying the integration of core competencies with cross-cutting interdisciplinary themes of public health. Prerequisite: graduate standing or consent of instructor. Satisfactory/Unsatisfactory only.

292 Ethics and Responsible Conduct of Research in Public Health (4). Covers issues of scientific integrity and satisfies the requirements for training in public health ethics. Includes guidelines for responsible conduct of research, federal and international codes, administrative review and approval, conflict of interest, and privacy and safety of research participants. Prerequisite: graduate standing or consent of instructor.

295 Graduate Practicum in Public Health (8). Provides opportunities for hands-on experience for graduate students at agencies or organizations engaged in public health practice. Students are matched with placement sites based on academic preparation and students' career goals. The practicum experience culminates in a comprehensive written report. Prerequisites: Public Health 290 and 291. Satisfactory/Unsatisfactory only.

298 Directed Studies in Public Health (2 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

299 Independent Study in Public Health (2 to 8). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

SCHOOL OF MEDICINE

Ralph V. Clayman, M.D., **Dean**

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Lari Wenzel, Ph.D. Arizona State University, *Professor, Department of Medicine (General Internal Medicine) and Program in Public Health*

Stephen H. White, Ph.D. University of Washington, *Professor, Department of Physiology and Biophysics*

Clifford B. Widmark, M.D. University of California, Los Angeles, *Health Sciences Associate Clinical Professor, Department of Psychiatry*

Sharon Wigal, Ph.D. State University of New York, *Health Sciences Clinical Professor, Department of Pediatrics, Child Development Center*

Tim Wigal, Ph.D. University of Texas, Austin, *Adjunct Professor, Department of Pediatrics, Child Development Center*

Aileen Wiglesworth, Ph.D. University of Kentucky, *Health Sciences Assistant Clinical Professor, Department of Family Medicine, Program in Geriatrics*

Petra Wilder-Smith, Ph.D. Bern University; D.D.S. Guys Hospital, *Associate Professor in Residence, Department of Surgery*

James H. Williams, Jr., M.D. Harvard University, *Adjunct Professor, Department of Medicine (Hospitalist Program and Pulmonary and Critical Care)*

Russell A. Williams, M.B.B.S. University of Sydney, *Associate Dean of Graduate Medical Education, Director of Surgery Medical Student Education, and Professor, Department of Surgery*

Archie F. Wilson, M.D. University of California, San Francisco, Ph.D. University of California, Los Angeles, *Professor Emeritus, Department of Medicine (Pulmonary and Critical Care)*

Samuel Eric Wilson, M.D. Wayne State University, *Associate Dean of Affiliated Institutions and Professor, Department of Surgery*

Deborah Wing, M.D. Tulane University, *Director of the Division of Maternal-Fetal Medicine and Professor of Clinical Obstetrics and Gynecology, Department of Obstetrics and Gynecology (Maternal-Fetal Medicine)*

Garrett A. Wirth, M.D. Albany Medical College, *Health Sciences Associate Clinical Professor, Department of Surgery (Plastic)*

Anne B. Wong, M.D. University of Pennsylvania, *Health Sciences Clinical Professor, Department of Anesthesiology and Perioperative Care*

Brian Wong, M.D. The Johns Hopkins University, *Professor, Departments of Otolaryngology and Biomedical Engineering*

David H. Wong, M.D. University of California, Irvine; Pharm.D. University of Southern California, *Chief, VA-Anesthesia Services, Vice-Chair Research, VALBHS, and Health Sciences Clinical Professor, Department of Anesthesiology and Perioperative Care*

Edward K. Wong, Jr., M.D. University of Southern California, *Associate Professor, Department of Ophthalmology*

Jason Jun-Hang Wong, M.D. Queen's University, *Health Sciences Assistant Clinical Professor, Department of Radiation Oncology*

Nathan D. Wong, Ph.D. Yale University, *Adjunct Professor, Departments of Medicine (Cardiology) and Epidemiology*

Joseph Chong-Sang Wu, M.D. University of California, Irvine, *Associate Professor in Residence, Department of Psychiatry and Human Behavior*

Mark Wu, M.D. University of Wisconsin, *Assistant Professor of Clinical Pathology, Department of Pathology and Laboratory Medicine*

Sing-Yung Wu, M.D. The Johns Hopkins University, Ph.D. University of Washington, *Professor in Residence, Department of Radiological Sciences*

Frederic Wyle, M.D. University of Pennsylvania, *Professor in Residence Emeritus, Department of Medicine (Infectious Diseases)*

Xiangmin Xu, Ph.D. Vanderbilt University, *Assistant Professor, Department of Anatomy and Neurobiology*

Rebecca Yamarik, M.D. Northwestern University, *Health Sciences Assistant Clinicial Professor, Department of Medicine (General Internal Medicine)*

Leman Yel, M.D. Hacettepe University, *Assistant Professor of Clinical Medicine (Basic/Clinical Immunology)*

Kyoko Yokomori, Ph.D. University of Southern California; Ph.D. of Agriculture (Veterinary Medicine) University of Tokyo, *Associate Professor, Department of Biological Chemistry*

Hiroshi Yoshioka, M.D., Ph.D. University of Tsukuba, *Professor in Residence, Department of Radiological Sciences*

Robert R. Young, M.D. Harvard University, *Professor in Residence Emeritus, Department of Neurology*

Ronald F. Young, M.D. State University of New York, *Professor Emeritus, Department of Neurological Surgery*

Jen Yu, M.D. National Taiwan University, Ph.D. University of Pennsylvania, *Department Chair and Professor, Department of Physical Medicine and Rehabilitation*

Christopher Zachary, F.R.C.P. Royal College of Physicians of London, *Department Chair and Health Sciences Clinical Professor, Department of Dermatology*

David P. Zamorano, M.D. University of Southern California, *Health Sciences Assistant Clinical Professor, Department of Orthopaedic Surgery*

Michael V. Zaragoza, M.D. Case Western Reserve University, *Health Sciences Assistant Clinical Professor, Department of Pediatrics, Division of Genetics and Metabolism*

Jason Zell, D.O. Nova Southeastern University, *Assistant Adjunct Professor, Departments of Medicine and Epidemiology*

Fan-Gang (Frank) Zeng, Ph.D. Syracuse University, *Director of the Hearing and Speech Laboratory and Professor, Departments of Otolaryngology, Biomedical Engineering, and Anatomy and Neurobiology*

Arthur D. Zepeda, M.D. University of California, Los Angeles, *Director of Pain Management Services, Director of the Pain Fellowship Program, and Health Sciences Assistant Clinical Professor, Department of Anesthesiology and Perioperative Care*

Xiaohui Zhao, M.D. Nanjing Medical University; Ph.D. University of Illinois, *Health Sciences Associate Clinical Professor, Department of Pathology and Laboratory Medicine*

Qun-Yong Zhou, Ph.D. Oregon Health Sciences University, *Professor, Department of Pharmacology*

Yi-Hong Zhou, Ph.D. Dalhousie University, *Assistant Professor and Assistant Professor in Residence, Departments of Neurological Surgery and Biological Chemistry*

Xiaolin Zi, Ph.D. Shanghai Medical University, *Associate Professor, Departments of Urology and Pharmaceutical Sciences*

Margaret Zimmerman, M.D. Northwestern University, *Health Sciences Assistant Clinical Professor, Department of Pediatrics (General Pediatrics)*

Argyrios Ziogas, Ph.D. University of Southern California, *Associate Adjunct Professor, Department of Epidemiology*

Albert Zlotnik, Ph.D. University of Colorado, *Professor, Department of Physiology and Biophysics*

SCHOOL OF MEDICINE OVERVIEW

The UCI School of Medicine became part of the University of California in 1965. Prior to this time it was known as the California College of Medicine which traces its roots to a private institution founded in 1896.

Mission Statement

The mission of the University of California, Irvine, School of Medicine is to promote biomedical sciences and medicine in Orange County, California, and beyond, through excellence in research, patient care, education, and community service. This mission is achieved through programs of excellence in the following:

Education: The School of Medicine is committed to provide educational programs of the highest quality to medical students, M.D./Ph.D. and M.D./M.B.A. students, residents, fellows, allied health, graduate academic students, practicing physicians and other health care professionals. Educational programs are offered along the continuum of medical education with programs in undergraduate, graduate, and continuing medical education. These programs emphasize the most current knowledge in the health sciences and reflect the changing practice of medicine. Further, the School of Medicine's educational programs are designed to stimulate lifelong self-learning and critical inquiry and to exemplify those human values necessary to fulfill the professional commitments of a career in the health sciences.

Research: Excellence in research is an essential feature of the School of Medicine. Therefore, the School is committed to develop and maintain research programs in the health sciences which seek to advance basic scientific knowledge and the prevention, diagnosis, and treatment of human illness.

Clinical Care: Recognizing its responsibility to meet the educational needs of students and the diverse needs of the patient community, the School of Medicine is committed to programs of clinical excellence across the spectrum of patient care disciplines.

Service to the Public: As a publicly assisted institution, the School of Medicine is committed to serve the community as a vital resource of expertise and knowledge. The School further serves the public through the training of health professionals whose backgrounds reflect California's ethnic and cultural diversity and whose professional careers address California's health care needs.

Vision Statement

The University of California, Irvine, School of Medicine will achieve preeminence through the creation, application, and dissemination of new knowledge in the biomedical sciences and medicine. This will be accomplished through international leadership in biomedical research, development of new therapies, delivery of state-of-the-art medical care, and innovative biomedical education.

Health Sciences Complex

The Health Sciences Complex is a 121-acre site that houses UCI's medical school facilities. Twenty-nine acres have been developed to provide space for teaching, research, and patient care as well as offices for departmental administration.

The School's basic science instructional programs are located in modern, well-equipped, medical sciences buildings. These units provide space for first- and second-year classes, lecture halls (including the Dr. S. Jerome and Judith D. Tamkin Student Lecture Hall), offices and laboratories for various basic and clinical departments. Other buildings house the School's administration, laboratories, and study center (located in J. Edward Berk Hall).

The new Medical Education building symbolizes the University's ongoing commitment to high-quality medical education and innovation. The $40-million, 65,000-square-foot building serves as the hub for nearly all non-hospital related educational activities for UC Irvine medical students, and incorporates the latest technology to help prepare tomorrow's doctors for healthcare in the digital age. The School of Medicine Educational Affairs Office is located in the Medical Education building, as well as the innovative Program in Medical Education for the Latino Community (PRIME-LC), an acclaimed program to improve healthcare for the Latino community by training medical students to care for this underserved population in a linguistically competent, culturally sensitive way.

The Medical Education building's telemedicine center includes a 60-seat interactive televideo auditorium where students watch UC Irvine physicians provide expert care over the Internet to patients in rural or other remote locations. Located on the second floor, the Clinical Skills Center is a cutting-edge facility for teaching and assessment of clinical skills, communication, and professionalism. The Center includes 17 fully equipped patient exam rooms, a central control room for exam administration and recording of all activities, and a computer software system that focuses on the capture, debriefing, and assessment of medical training. The building also features an advanced simulation learning center. The Simulation Lab is a four-suite lab that utilizes high-fidelity human patient simulators with physiologically accurate responses to stimuli to enhance learning and assess competency. The lab is equipped with a fully operational anesthesia suite, a trauma suite, and a general ward environment. The Simulation Lab has two debriefing rooms for immediate feedback on performance as well as a large central control room for all simulation activities.

In addition, the 40,000-square-foot Plumwood House is devoted to basic research in the fields of neurological disorders, diagnostic systems and reagents, and industrial bioreactors. In this facility, faculty from the Department of Biological Chemistry share laboratory space with corporate researchers.

Outpatient services are available on campus through the Louis A. and Helen C. Gottschalk Medical Plaza and the Beckman Laser Institute. The Plaza capitalizes upon the broad range of diagnostic and therapeutic programs of the School as well as the extensive clinical expertise of the faculty. The facility offers primary care and specialty services. Special programs in diabetes, multiple sclerosis, Alzheimer's disease, and inflammatory bowel diseases also are offered. The Plaza also houses UC Irvine Corporate Health Services and the Gavin Herbert Eye Institute, which offers the latest in diagnostic health care for eye diseases, including computerized refraction analysis, glaucoma diagnosis, and ultrasound analysis of eye disorders.

Housing one of the world's leading programs in medical laser technology, the Beckman Laser Institute offers state-of-the-art treatment for cancer and dermatological conditions. The Institute specializes in the development and application of laser and other optical technologies for the diagnosis and treatment of disease.

BIOMEDICAL RESEARCH CENTER

UCI's Biomedical Research Center (BRC) is a landmark public-private collaboration between UCI and businesses involved in biomedical, biotechnological, and healthcare services. The Center enables UCI researchers and participating companies to work alongside one another, combining basic science, clinical study, and product development to find new approaches to the diagnosis and treatment of disease. The William J. Gillespie Neuroscience Research Facility, the first of several BRC buildings, is the home

of a core group of prominent scientists investigating the causes and cures for neurological disorders, including Alzheimer's disease, Parkinson's disease, schizophrenia, and spinal cord injury. The second building is the Robert R. Sprague Family Foundation Hall, where scientists work to reveal the role of genetics in cancer treatment and prevention. The third building, the Dottie and George Hewitt Research Hall, is home to a state-of-the-art General Clinical Research Center and internationally recognized investigators studying infectious diseases, molecular medicine, immunology, and complementary and alternative medicine. The Sue and Bill Gross Stem Cell Research Center will be the fourth building in UCI's Biomedical Research Center. Opening in 2010, this state-of-the art research and clinical building will foster a multi-pronged approach to neurodegenerative repair and basic stem cell biology by supporting basic research, regenerative medicine, and drug-development programs.

CHAO FAMILY COMPREHENSIVE CANCER CENTER

The Chao Family Comprehensive Cancer Center is the only National Cancer Institute-designated facility in Orange County and one of only 40 such centers in the country. Overall, more than 100 faculty members at the Cancer Center are involved in several major research programs, encompassing everything from basic research that looks at how cancer cells grow to bone marrow transplantation. Located at the UC Irvine Medical Center in Orange, the 56,000-square-foot facility provides an ideal setting for the practice of all the basic and clinical subspecialties involved in adult and pediatric oncology, including the application of the latest techniques for diagnosis and management of patients with cancer.

UNIVERSITY OF CALIFORNIA, IRVINE HEALTHCARE

UC Irvine Healthcare, the clinical entity of UC Irvine, is committed to providing the highest quality healthcare to Orange County and surrounding communities through UC Irvine Medical Center, the county's only university hospital in Orange County.

UC Irvine Medical Center, located in the City of Orange, is a 422-bed, comprehensive medical care center. It is the principal clinical facility of the School of Medicine operated by the University. The medical faculty of the School of Medicine together with the medical resident-physician staff, provide the professional care. A full scope of acute- and general-care services are offered at UC Irvine Medical Center including cancer, cardiology, digestive disease, dermatology, obstetrics and gynecology, neonatology, psychiatry, family medicine, pathology, radiology, physical medicine and rehabilitation, ophthalmology, neurology, anesthesiology, orthopaedics, geriatrics, oncology, neurosurgery, otolaryngology, and urology, just to name a few.

UC Irvine Medical Center also has cardiac, neonatal, respiratory, burn medical-surgery, and neurosciences intensive care units, and more than 90 specialty outpatient services. It is Orange County's only Level I trauma center—the most comprehensive designation for the treatment of life-threatening injuries. The UC Irvine Douglas Hospital opened at UC Irvine Medical Center in March 2009. The seven-story hospital has 236 beds, 19 operating rooms, and interventional procedure rooms. Private patient rooms offer patients optimal comfort and healing and accommodate family members who wish to stay overnight. For more information about UC Irvine Healthcare, visit http://www.ucihealth.com.

UCI FAMILY HEALTH CENTER–SANTA ANA

The UCI Family Health Center–Santa Ana is a state-of-the-art primary care facility, conveniently located near the Santa Ana Civic Center. The Center has two missions—healthcare delivery and medical education.

As a community clinic, the Family Health Center's multilingual physicians and staff are committed to providing quality health care to patients, including the medically underserved. It provides primary care services to people of all ages including family medicine, preventive care for children and adults, and specialty care in pediatrics and obstetrics and gynecology.

As an integral part of the UCI School of Medicine, the Family Health Center provides educational and training opportunities for medical and nurse practitioner students, including the UCI Family Medicine and Obstetrics and Gynecology residency training programs.

UCI FAMILY HEALTH CENTER–ANAHEIM

The UCI Family Health Center–Anaheim provides care for more than 20,000 outpatient visits annually and training programs for resident physicians in primary care, general internal medicine, and general and adolescent pediatrics. There are additional programs in gynecology, dermatology, general surgery, podiatry, neurology, ophthalmology, optometry, orthopedics, psychiatry, and multispecialty faculty practice. The Center provides training for medical students in their primary care, general pediatric, adolescent medicine, and geriatric medicine rotations and electives.

AFFILIATED HOSPITALS AND CLINICS

Additional major teaching and research programs of the School of Medicine are conducted at the Veterans Affairs Long Beach Healthcare System, Children's Hospital of Orange County (CHOC), and Long Beach Memorial Medical Center. Other academic programs are conducted in affiliation with San Bernardino County Medical Center, Fairview Developmental Center (Costa Mesa), Kaiser Foundation Hospital (Anaheim, Bellflower, and Riverside), Children's Hospital of Los Angeles, Metropolitan State Hospital (Norwalk), The City of Hope Medical Center (Duarte), Western Medical Center (Tustin/Santa Ana), the Kern Medical Center (Bakersfield), Clínica Sierra Vista (Lamont), Presbyterian (Newport Beach), Fountain Valley Hospital and Medical Center, and the Orange County Health Care Agency/Public Health Clinic.

School of Medicine Alumni Relations

The UCI School of Medicine is an outgrowth of what began in 1896 as the Pacific College of Osteopathy (PSO). Some years later it became the College of Osteopathic Physicians and Surgeons, which then evolved into the California College of Medicine in 1962 and subsequently joined the UC system in 1965. The Office of Alumni Relations provides programs and services for nearly 4,000 alumni of the School as well as for students. From financial support to Honor's Night awards, mentorship to reunions, the Office of Alumni Relations seeks to provide a cornerstone from which students and alumni can benefit from their relationships to one another and in so doing, strengthen the School of Medicine.

THE M.D. PROGRAM

Admissions

All inquiries regarding the UCI School of Medicine's admission programs and procedures should be directed to:

University of California, Irvine
School of Medicine
Office of Admissions and Outreach
Medical Education Building
Irvine, CA 92697-4089

(949) 824-5388 or (800) UCI-5388
http://www.meded.edu/admissions/

The UCI School of Medicine is a member of the American Medical College Application Service (AMCAS). All students who seek entrance to the UCI School of Medicine must complete the AMCAS application. AMCAS application information is available at http://www.aamc.org/students/amcas/start.htm. Applications

must be submitted between June 1 and November 1 of the year preceding anticipated admission.

SELECTION FACTORS

The UCI School of Medicine seeks to admit students who are highly qualified to be trained in the practice of medicine and whose backgrounds, talents, and experiences contribute to a diverse student body. The Admissions Committee carefully reviews all applicants whose academic record and MCAT scores indicate that they will be able to handle the rigorous medical school curriculum. In addition to scholastic achievement, attributes deemed desirable in prospective students include leadership ability and participation in extracurricular activities such as clinical and/or medically related research experience, as well as community service. Careful consideration is given to applicants from disadvantaged backgrounds.

Information provided by the AMCAS application is used for preliminary screening. Based on decisions reached by the Admissions Committee, applicants may be sent a secondary application. Applicants receiving a secondary application are requested to submit additional materials which include a minimum of three letters of recommendation, supplemental information forms, and a nonrefundable application fee of $70. Upon further review by the Admissions Committee, approximately 500 of those applicants receiving a secondary application will be interviewed. Regional interviews are not available. Preference is given to California residents and applicants who are either United States citizens or permanent residents. The UCI School of Medicine does not accept transfer students.

REQUIREMENTS FOR ADMISSION

Students can be considered for admission to the School of Medicine if they meet the following requirements:

1. A minimum of three years (90 semester units) of undergraduate course work is required, including a minimum of one full-time year at an accredited U.S. college or university. A baccalaureate degree is strongly recommended but not required. Candidates for admission may submit community college credit only to the extent granted on transfer to a four-year college or university. For purposes of evaluation, letter or numerical grades are preferred for course work, particularly for the required subjects listed below. Final enrollment into the first-year class at the School of Medicine is contingent upon evidence of satisfactory completion of all requirements with a grade of C or higher and of all courses listed as in progress at the time of application. Failure to meet the requirements or falsification of information are grounds for rejection or dismissal.
2. Completion of the following college course requirements prior to matriculation:

Subject	Comments	Semester Units
Biology	Courses must include a minimum of one semester or two quarters of upper-division biology, excluding botany.	12
Chemistry	Courses must include inorganic, organic, and biochemistry	16
Physics		8
Math	Courses must include calculus and statistics	6
English Writing/ Composition		3

Applicants are strongly encouraged to have completed their basic science requirements at the time of application. No specific major is required, however, demonstrated ability in the sciences is of great importance. In addition, applicants are advised to take advantage of the intellectual maturation afforded by a well-rounded liberal arts education. English, the humanities, and the social and behavioral sciences are considered particularly important. The following courses are also recommended but not required: molecular biology, cell biology, genetics, vertebrate embryology, psychology, and Spanish.

3. The Medical College Admission Test (MCAT), http://www.aamc.org/students/mcat/start.htm, is required. The MCAT must be taken within three years of application, no later than September of the year prior to matriculation.
4. A criminal background check is conducted on all accepted applicants.
5. All students matriculating to the UCI School of Medicine must be able to meet the Technical Standards available for viewing at http://www.meded.uci.edu/Admissions/TechnicalStandards.html.

OUTREACH

Outreach efforts coordinated by this office are designed to introduce students to the medical profession during their high school and undergraduate education. An additional goal of this office is to build a pipeline of potential candidates for medical school and recruit students from socio-economically disadvantaged groups who have a desire to serve in the medically underserved communities in California. To reach these goals, programs are developed and implemented for students in high school, community colleges, and four-year undergraduate institutions. Examples of these activities include a Postbaccalaureate Program, Premedical Conferences, and Summer Outreach Programs. Outreach staff conduct academic advising related to the medical school admissions process and develop liaisons with UCI undergraduate academic programs and pre-health advisors.

Medical Student Advisor System

The School of Medicine provides a comprehensive academic advising and assistance program that spans the full duration of the students' educational program.

Academic Skills Assessment

All entering students undergo an academic skills assessment during the new student orientation. Students then meet individually with the associate dean for student affairs, the academic skills coordinator, and the School of Medicine psychologist to discuss study skills, early performance, and overall adjustment to medical school. Additional services are provided on an as-needed basis by the academic skills coordinator and the SOM psychologist.

Academic Advisors

Michael Prislin, M.D., Associate Dean Student Affairs (949) 824-8358

Student academic performance during the first two years is monitored on a monthly basis by the Educational Support Committee. The committee develops specific action plans for each student experiencing academic difficulty. All students are also assigned a faculty advisor beginning early in their first year. This faculty advisor serves as the student's Clinical Foundations course small-group leader during years one and two. For years three and four, academic advisement occurs primarily via continuing interactions with the student's faculty advisor and the associate dean for student affairs. Also during years three and four, the Educational Support Committee consisting of the Clinical Clerkship Directors periodically reviews student performance. The faculty advisor provides semi-annual reviews and formative feedback regarding student performance as well as general counseling relating to emerging career preferences and year-four scheduling. Students also have access to a group of faculty from various departments who have agreed to provide specialty-specific academic advice in their disciplines.

Several workshops are conducted during the second half of year three and early in year four to prepare students for the residency application process. All students also meet individually with the associate dean for student affairs to review their Medical Student Performance Evaluation (dean's letter) and discuss individual residency application strategies. Additional resources are involved on an as-needed basis by the associate dean for student affairs.

Peer Review and Peer Counseling Program

Michael Prislin, M.D., Chair (949) 824-8358
Associate Dean Student Affairs

The School of Medicine has an informal peer review process, aimed at early detection and assistance for medical students who are experiencing difficulty such as professional conduct problems, suspected impairment, violation of the honor code, or violation of any University policy, regulation; or rule. The Peer Review Committee is comprised of two representatives from each class, the student body co-presidents, and two advisory faculty members. The committee operates within guidelines set jointly by the School of Medicine administration and the student body. Cases involving serious professional misconduct are referred to the Dean's Office. The Peer Review Committee conducts hearings and may impose sanctions or provide assistance to the student.

Medical Scientist Training Program (M.D./Ph.D.)

Alan Goldin, M.D., Ph.D., Chair (949) 824-5264

Exceptionally well-qualified students interested in careers in academic medicine and with demonstrated research accomplishments may be considered for admission to the Medical Scientist Training Program (MSTP). Students in this program pursue a combined curriculum for an M.D. degree from the School of Medicine and a Ph.D. degree from any of the graduate programs at UCI. The normative time for completion of the program is eight years, and students holding either degree are not eligible for MSTP. The maximum time for completion of the program is 10 years. Additional information is available from the MSTP Coordinator's Office, (949) 824-5264; mstp@uci.edu; http://www.mstp.uci.edu/.

Applicants must submit a supplementary application (available from the School of Medicine Office of Admissions) to the Medical Scientist Training Program when they are submitting their secondary application information to the School of Medicine. Students accepted into the program have the option of pursuing graduate study in any of the graduate programs at UCI. Although a specific graduate department need not be chosen at the time of admission, students are expected to have selected a field for their graduate studies. Financial support in the form of a fellowship, which includes a stipend as well as tuition and fees, is provided. Applicants not accepted into MSTP may be considered separately for admission to the School of Medicine.

M.D./M.B.A. Degree Program

Maria Chandler, M.D./M.B.A., Faculty Advisor (949) 824-7133

The M.D./M.B.A. program requires five or six years for completion. It is aimed at individuals who are exceptional in ability and motivation and who seek a career as physicians with major responsibility for administration and management in health care organizations and institutions. Students in this program pursue a combined curriculum for an M.D. degree from the School of Medicine and an M.B.A. degree from The Paul Merage School of Business.

Students must be currently enrolled in the M.D. program in order to apply to the combined M.D./M.B.A. program. During their second or third year of medical school, interested students submit an application to The Paul Merage School of Business Admissions Committee, after review by the School of Medicine. Final acceptance to the program is granted by The Paul Merage School of Business, and M.B.A. course work begins following completion of the student's third year of medical school. Students should be aware that enrollment in the M.D. program does not guarantee acceptance into the M.B.A. program.

The MCAT, along with the completion of three years of medical school training in good standing and passage of USMLE Step 1, currently serve as a waiver for the GMAT entrance examination usually required for application to the M.B.A. program. The total number of units required to graduate from each program separately are satisfied in the M.D./M.B.A. program.

Program in Medical Education for the Latino Community (PRIME-LC)

Charles Vega, M.D., Director (949) 824-7136

A carefully selected group of students from diverse backgrounds and with superior academic credentials, proven commitment to service, and solid conversational Spanish will be considered for acceptance to the Program in Medical Education for the Latino Community (PRIME-LC) at the UCI School of Medicine. PRIME-LC responds to the increasing demand for physician-leaders who are culturally and linguistically competent to address the health care delivery, research, and policy needs of underserved Latino communities in California. The program spans all three components of medical training: undergraduate (medical school), graduate (residency program), and continuing medical education (post-residency). Students in PRIME-LC complete additional value-added curriculum in addition to their medical training in order to reach their goals of leading communities, and they also complete a Master's degree program of their choice. The first residency positions in any UC PRIME opened in the UCI Family Medicine program in 2010.

The PRIME-LC supplemental application is part of the UCI School of Medicine secondary application and must be completed to be considered for acceptance. Applicants selected for faculty and student interviews are required to undertake a third interview in Spanish to evaluate conversational skills and commitment to service. All interested applicants, including those who are not currently California residents, are encouraged to complete the PRIME-LC application. Financial support is available in the form of scholarships, loans, and loan repayment programs. Applicants not accepted into PRIME-LC may be considered separately for admission to the regular School of Medicine M.D. program. For more information contact (949) 824-7136; primelc@uci.edu; http://www.meded.uci.edu/PRIMELC.

The M.D. Curriculum

The UCI medical curriculum continues to meet the changing needs of medical education within all four years of instruction. Indeed, the School of Medicine faculty views curriculum development as a continual process and feels that medical education and teaching innovations must be encouraged and supported. The curriculum is designed to encourage medical students to become participants in their education process, to be active rather than passive learners, to become lifelong learners, and to use cooperative and team-learning principles.

UCI is dedicated to the nurturing of humanistic, caring physicians with top-notch clinical expertise and skills. The School strives for this through a curriculum that is not only anchored in the science of medicine but also provides meaningful experiences in the humanistic dimensions of medicine. In this context, the faculty endeavors to provide students with experiences in areas such as communications and empathy, ethics and professionalism; diversity awareness; and cultural sensitivity and medical humanities. The

faculty also feels that the curriculum should strive to integrate basic and clinical sciences by bringing substantial clinical material into the early phases of medical education.

The School has achieved vertical integration of the curriculum with the development of a series of "Clinical Foundations" courses. The courses are longitudinal multidisciplinary experiences broadly designed to prepare students for their future careers in medicine through the application of experiential and self-directed learning principles. First-and second-year students begin to prepare for their clerkships through clinical exposures featuring standardized patients and clinical tag-along experiences. These courses also utilize small group learning sessions to reinforce core concepts of patient-physician interactions and introductory clinical reasoning skill development. During the Clinical Foundations IV course (years three and four) students explore many of the crucial issues first presented during the introductory courses. During this segment greater emphasis is placed on advanced skill acquisition and more mature professional role development.

To satisfy the requirement for the M.D. degree, each medical student must successfully complete the full curriculum. Students must also pass both Step 1 and Step 2 of the United States Medical Licensing Examination (USMLE) and successfully pass a Clinical Practice Examination (CPX) prior to graduation.

An ongoing academic monitoring program is coordinated by the Office of Student Affairs, which identifies students early who might be experiencing academic difficulty and provides them with resources to successfully complete their course work. Faculty advisors are assigned to students during their first and second years. Students have advisory sessions with M.D. faculty prior to the scheduling of their fourth-year course work. A Learning Resources Program is available to provide tutorial assistance and study skills training. USMLE reviews are also provided.

CURRICULAR POLICIES

The curricular policies of the School of Medicine are the responsibility of the faculty committees on Curriculum and Educational Policy and on Promotions and Honors. A listing of these policies, as well as information regarding registration, rules and regulations, grading procedures, and requirements for academic advancement, are contained in the *School of Medicine Handbook,* which is available at http://www.meded.uci.edu/Students.

First and Second Years: Basic Science and Preclinical Course Work

First Year	Second Year
Clinical Foundations I	Clinical Foundations II
Anatomy and Embryology	Medical Microbiology
Neuroscience	General and Systemic Pathology
Histology	Clinical Pathology
Medical Genetics	Medical Pharmacology
Medical Biochemistry and Molecular Biology	
Physiology/Pathophysiology	
Immunology	

Third- and Fourth-Year Requirements[1]

Clinical Foundations III	Clinical Foundations IV
Family Medicine	Emergency Medicine
Inpatient Medicine	Intensive Care Unit
Ambulatory Medicine	Neuroscience
Obstetrics and Gynecology	Radiology
Pediatrics	Senior Subinternship[2]
Psychiatry	Electives
Surgery	

[1] The sequence of third and fourth years varies.
[2] Prerequisite: Inpatient and Ambulatory Medicine.

Curricular Description

FIRST-YEAR CURRICULUM

Clinical Foundations I

Clinical Foundations I, first of the four-part Clinical Foundations series, serves as the introductory clinical medicine course for first-year medical students. Participating students learn core skills in physician-patient communication, medical interviewing, physical examination, and health promotion. The course is horizontally integrated with the basic science curriculum. The series includes a variety of small and large group sessions taught by three types of faculty: core teachers, content theme coordinators, and community preceptors. Students complete multiple medical interviews, physical examinations, and patient write-ups for which they receive feedback designed to improve proficiency. *(Medicine 554A-B-C)*

Anatomy and Embryology

The structure of the human body is taught in Anatomy and Embryology. Emphasis is placed on normal structure as it relates to function, with consideration of abnormal structures that may be revealed in a clinical setting. Anatomy is taught through a regional approach, with an emphasis on laboratory dissections and demonstrations, augmented by lectures, radiographic films, discussions, and clinical correlate material. The course includes a detailed consideration of the embryologic aspects of human development. *(Medicine 500A-B)*

Neuroscience

The objective of this course is to provide students with the fundamental concepts, vocabulary, and learning strategies to attain a level of proficiency in basic integrative neurosciences so that they will develop an understanding in the clinical neurosciences throughout their careers as physicians. The course is integrative in the sense that the underlying knowledge of molecular, cellular, physiological, developmental, and neuroanatomical organization of the nervous system is brought together in each lecture block with clinical themes and examples in lectures, and which is further reinforced by clinical correlates given by clinicians. The course emphasizes knowledge of the nervous system using lessons from clinical neuroanatomy, systems neurosciences, and regional and developmental neuroanatomy. The course uses the Blumenfeld text, Haines atlas, wet lab handouts, and the Neurosyllabus CD, which are all geared toward mastering this multiple strategy to the study of the human nervous system. *(Medicine 502A)*

Histology

Histology is designed to provide students with knowledge of the major features of the structural organization of cells, tissues and organs, and how that organization is related to function. Course material consists of lectures, clinical correlate discussions, and group/independent study of images. Emphasis is placed on normal structure and function, with consideration of abnormalities in clinical cases. *(Medicine 503A-B)*

Medical Genetics

Medical Genetics reviews the basic principles of human genetics related to disease. Assessment of patterns of genetic risk, screening for genetics diseases, and cytogenetics and biochemical diagnosis are presented. Utilization of the human gene map and DNA sequence information for molecular genetic diagnosis are discussed. Students are introduced to the use of genetic databases and bioinformatics. Approaches to treatment of genetic diseases are presented. Legal, ethical,and social aspects of diagnosis and management of genetic disease are discussed. *(Medicine 511)*

Medical Biochemistry and Molecular Biology

Covers the following topics from a biomedical perspective: protein and nucleic acid biochemistry, carbohydrates, lipids, amino acids,

purines and pyrimidines, genome structure, molecular mechanisms of development, and signal transduction. *(Medicine 522)*

Physiology/Pathophysiology

This course consists of lectures, clinical correlates, hands-on workshops, small group discussions, and exercises in the simulation center covering the classical concepts of medical physiology. Specific topics include hemostasis, blood, neurophysiology, cardiovascular, respiratory, renal, gastrointestinal, endocrine, exercise, temperature regulation, and sexual physiology. Prerequisite: Medical Biochemistry and Molecular Biology. *(Medicine 543A-B)*

Immunology

Immunology covers the cellular and molecular basis of immune responsiveness and the roles of the immune system in both health and disease. The material is presented in lectures and clinical correlates, as well as in a set of printed core notes. Also included are a number of Patient-Oriented Problem Solving (POPS) sessions in which participation is required. *(Medicine 544)*

SECOND-YEAR CURRICULUM

Clinical Foundations II

Clinical Foundations II, second of the Clinical Foundations series, builds second-year medical students' clinical skills. Students learn advanced skills in history-taking, physical diagnosis, and clinical reasoning. Clinical didactics sessions synthesize learning in the clinical and basic sciences. The course is comprised mostly of small-group sessions taught primarily by three types of faculty: core clinical teachers, community clinical teachers, and content theme coordinators. With these faculty, students work on focused, guided practice of clinical skills that integrates basic science course work. About a third of the course is in the form of large group clinical didactic and interactive sessions to synthesize clinical and basic sciences. *(Medicine 555A-B)*

Medical Microbiology

This course covers the biology of infectious agents, including viruses, bacteria, fungi, and parasites, to provide the foundation in microbiology for the subsequent study of infectious diseases. Lectures, small group sessions with clinicians, and laboratory sessions are used to teach the molecular bases of microbial pathogenesis, diagnostic testing, antimicrobial therapy, and prevention strategies. Prerequisite: first-year curriculum. Graduate students must have approval of the course director and enroll through the Department of Microbiology and Molecular Genetics. *(Medicine 507A, B)*

General and Systemic Pathology

This course deals with basic causes, mechanisms, and consequences of disease processes and with some applications of these considerations to clinical medicine. After an introduction to general types of disease processes, these processes are studied further as they affect specific organs and organ systems. Prerequisite: first-year curriculum. *(Medicine 508A-B-C)*

Clinical Pathology

This course consists of lectures and laboratories covering the areas of hematology, blood bank, clinical chemistry, and microbiology. It provides students with a foundation for understanding the pathogenesis of a variety of disease states, as well as a foundation for the proper use of the laboratory for diagnosis and optimum patient management. Prerequisite: first-year curriculum. *(Medicine 509A-B)*

Medical Pharmacology

This course covers the various classes of drugs that are used in medicine, particularly those used in specific or symptomatic treatment of disease states. Drugs of abuse are also covered. Emphasis is on the mechanisms of action of drugs at the organ and system level and on their use in medicine. The course includes lectures that illustrate pharmacologic principles, supplemented by small group problem-solving sessions. Prerequisites: Biochemistry and Physiology. *(Medicine 517A-B-C)*

THIRD- AND FOURTH-YEAR CURRICULUM

Clinical Foundations III

The final part of the Clinical Foundations series is a one-month, full-time block rotation at the beginning of the third year in which all students participate five days per week. Taught by the Clinical Foundations core teachers and selected full-time faculty volunteers, Clinical Foundations III provides comprehensive preparation for third-year clinical rotations. Every morning and afternoon, students participate in hands-on exercises and labs addressing (1) course overview, medical professionalism (large-group session); (2) advanced clinical skills (small groups); and (3) hands-on technical skills (small groups). *(Medicine 550)*

Obstetrics and Gynecology Clerkship

During this eight-week clerkship, students are taught an introduction to reproductive physiology and clinical obstetrics and gynecology. Practical experience is obtained throughout the rotations of labor and delivery, gynecology, and the outpatient clinic. In addition, students have an elective choice between gynecologic oncology, high-risk obstetrics, and gynecologic surgery. Required third-year rotation. *(Medicine 524)*

General Surgery Clerkship

The General Surgery clerkship provides students, as members of the surgical team, with an opportunity to study surgical patients in outpatient and hospital settings. Students acquire surgical knowledge, as well as develop skills in taking surgical histories and conducting physical examinations. Emphasis is placed on the clinical evaluation, pathogenesis, diagnosis, and treatment of surgical diseases. Students spend six weeks on general surgery (three weeks each at UC Irvine Medical Center and Veterans Affairs Long Beach Healthcare System) and one week on one of the subspecialties (urology, ENT, orthopaedics, or plastic surgery). *(Medicine 526)*

Inpatient and Ambulatory Medicine Clerkship

The clerkship occurs in a highly structured clinical environment in both in-patient and ambulatory settings. Students gradually assume responsibility for the care of patients, thereby enhancing their clinical, diagnostic, and procedural skills. Clinical vignettes and bedside teaching serve to round out the experience. Required third-year rotation. *(Medicine 527A, 527B)*

Pediatrics Clerkship

The pediatrics clerkship serves as an introduction to general pediatrics. Students rotate on the pediatric inpatient service, pediatric ambulatory settings, and the newborn nursery. During the clerkship, students develop their knowledge and skills in conducting age-appropriate patient histories and physical examinations and developing differential diagnoses and management plans. *(Medicine 528)*

Psychiatry Clerkship

This six-week clinical clerkship provides an opportunity for hands-on experience in the process of recognizing, diagnosing, and treating mental illness using the latest neuropharmacological advances in brain research as well as more traditional psychotherapeutic approaches. Each student participates fully in patient care, clinical teaching, and conferences. There are several choices of clinical settings for the rotation, including adult inpatient psychiatry, adolescent inpatient psychiatry, consultation and emergency psychiatry, adolescent partial hospitalization program, and a variety of substance abuse and ambulatory experiences. The sites include UC Irvine Medical Center and Veterans Affairs Long Beach Healthcare

System. A required lecture series is presented on Wednesday afternoons at UC Irvine Medical Center, as well as problem-based learning cases on Friday afternoons. *(Medicine 529)*

Neuroscience Clerkship

UCI students are required to take a four-week neuroscience clerkship during either their third or fourth year. Students are encouraged to do this in the third year as it will be useful for the USMLE Step 2 examination. Extramural students may take the course as an elective if a slot is available. This clerkship emphasizes the development of skills in taking a neurological history and performing a neurological examination, formulating a differential diagnosis, and proposing a course of management for neurological disorders. *(Medicine 532)*

Radiology Clerkship

This core clerkship consists of daily clinical film conferences, didactic lectures, and Web-based laboratory. Radiology conferences inter-relate general medicine, surgery, and radiology. Emphasis is given to correlate clinical findings and use the imaging modalities for problem-solving and diagnosis and treatment, including an understanding of risk/cost/benefit ratio involved in daily clinical practice. *(Medicine 533)*

Clinical Foundations IV

This is a two-week required course that all fourth-year students take during the month of March. The students prepare presentations for their peers and faculty that integrate basic science and clinical science. The course also prepares the students for residency and provides them with an opportunity to obtain ACLS certification. *(Medicine 535)*

Senior Subinternship

Students spend four weeks as subinterns during which time they carry the full ward responsibility of an intern on one-half the number of patients usually carried by an intern. The subinternship is designed to improve clinical competence and to prepare the students for the challenges and demands of the internship. Students may choose between subinternships in medicine, surgery, or pediatrics. *(Medicine 536, 537, 538, or 539)*

Family Medicine Clerkship

This clerkship matches students with a family physician for a four-week block. Students are assigned to a UCI-affiliated clinic where the principles of family medicine and primary care are taught. Emphasis is placed upon exposing students to the 25 most common health care problems seen in family medicine. Students are exposed to the principles of community health and epidemiology, as practically applied in an ambulatory care setting. Students develop an awareness of the current health care delivery environment, including issues such as health care costs and the lifestyle of a family physician. Special tracks are available for interested students in geriatrics, integrative medicine, and underserved care. Special teaching sessions on family centered maternity care, health maintenance and nutrition, and musculoskeletal joint exams are part of the experience. A curriculum in ophthalmology is also part of the clerkship. Prerequisites: successful completion of the first- and second-year curriculum. *(Medicine 597)*

Intensive Care Unit

This is a four-week rotation offered at UC Irvine Medical Center and Veterans Affairs Long Beach Healthcare System. ICU is offered in medicine, surgery, and anesthesiology. Students function as subinterns, becoming integral members of the ICU team, and serve as primary caregivers under supervision. *(Medicine 605B, 630K, 633M, or 685U)*

Emergency Medicine

The objectives of the Emergency Medicine clerkship are to introduce students to principles of acute care medicine while caring for acutely ill and injured patients. Students have the opportunity to evaluate patients, expand their directed history and physical making skills, create a broad differential diagnosis, and formulate effective testing and treatment strategies. Active participation in patient care through refinement of procedural skills is largely emphasized and encouraged. The course consists of experiences in direct patient care, assigned readings from emergency medicine references, weekly conferences, and an end-of-rotation final examination. *(Medicine 630D)*

ELECTIVES

Depending upon their particular interests, needs, and goals, students may take a variety of elective courses consisting of at least 30 contact-hours per week during the third and fourth years. Electives must be approved by the clinical faculty advisor. Students may take up to 20 weeks of their fourth-year course work (core/electives) at institutions other than UCI.

A listing of elective courses and descriptions can be found online at http://www.meded.uci.edu/elective.

All questions regarding the curriculum, electives, or matters of records should be directed to:

University of California, Irvine
School of Medicine
Office of Educational Affairs
Medical Education Building
Irvine, CA 92697-4089

General information/records: (949) 824-6138; scheduling: (714) 456-8462; curriculum: (949) 824-4609.

Office of Educational Affairs

Gerald A. Maguire, M.D., Senior Associate Dean (949) 824-5798

The Senior Associate Dean for Educational Affairs, in cooperation with the Academic Senate faculty, has responsibility for administrative oversight of the educational program leading to the M.D. degree, the postgraduate residency programs, and continuing medical education programs provided for practicing physicians and allied health personnel. The Senior Associate Dean also has administrative oversight responsibility for the Office of Admissions and Outreach. The Office of Undergraduate Medical Education provides services for the M.D. program which include curriculum development, implementation, management, and evaluation. The Office of Student Affairs provides student support services which include academic advisement, learning skills counseling, psychological counseling, career counseling, and student records, and coordinates additional services offered through general University offices which include housing, student health, and disabled student services.

Student Affairs

Michael Prislin, M.D., Associate Dean	(949) 824-8358
Barbara Lutz, Registrar, Director	(949) 824-5283
Marianne Ross, Ph.D., Counseling Psychologist	(949) 824-4621
Geraldine Codd, Academic Skills Coordinator	(949) 824-3415

The mission of the Office of Student Affairs is to create an environment within the School of Medicine community that fosters student attainment of the School of Medicine educational objectives. This is accomplished through assuring that student participation in the educational program occurs in a manner consistent with School of Medicine policies and regulations, and through the provision of support services that facilitate optimal student participation in the educational program. To accomplish the educational assurance mission, the Office of Student Affairs disseminates information

regarding academic policies and regulations, provides administrative and executive support for the faculty Committee on Promotions and Honors, and facilitates the institutional recognition of student achievement through the conduct of various School of Medicine events. To accomplish the educational support mission, the Office of Student Affairs provides academic, personal, psychological, career, and financial counseling; academic skills assessment and learning resources support, student wellness programs, student facilities support, initiatives to enhance the learning environment, and support for a variety of student organizations and informal activities.

Financial Aid

Luis Medina, Director (949) 824-6476

The UCI School of Medicine Financial Aid Office provides financial assistance and financial counseling services to entering and continuing medical students. The office secures, manages, and provides funds in the form of scholarships, grants, and loans to assist in meeting students' educational expenses.

The office coordinates financial aid application materials; tracks documents needed to complete an application; reviews and evaluates information provided by applicants; awards financial aid programs; and conducts research to determine basic educational expense budgets. It also provides students with information on policies and procedures, cost of attendance, and eligibility criteria.

In providing counseling services, the office advises students, reviews their individual circumstances, and provides financial assistance within financial aid program guidelines. It presents financial aid workshops for prospective and enrolled students to enhance their knowledge about financial aid programs and the application process, provides debt management counseling, and conducts entrance and exit interviews.

Curricular Affairs

Shahram Lotfipour, M.D., M.P.H., Associate Dean, Clinical Science Education (949) 824-6138

Harry T. Haigler, Ph.D., Associate Dean, Basic Science Education (949) 824-6304

This office provides support related to curricular issues for the School of Medicine, departments, faculty, and students; initiates curriculum review and innovation to meet the challenges of contemporary medical education; establishes and reviews the objectives of the School of Medicine and ensures individual courses are teaching to meet the objectives; serves as facilitators of new programs and curriculum and supports working committees during curriculum development; facilitates and monitors curriculum content theme integration; and maintains records on course materials and grading policies. This office is responsible for curriculum documentation for review by the Curriculum and Educational Policies committee; the collection of course evaluations by students; maintaining accurate information on core and elective curriculum; and assessing the success of the current programs.

Instructional Technology Group

Warren Wiechmann, M.D., Faculty Director (949) 824-6138

Armando Gama, MACC Director (949) 824-1215

The Medical Academic Computing Center (MACC) was established for the instructional use of computing and to further educational objectives by providing medical instructional software that is integrated into the curriculum for numerous courses, including Histology, Pathology, Medical Genetics, Neurosciences, and Anatomy. The Center, which has extended evening and weekend hours, provides students access to Internet resources and productivity applications. Students benefit by utilizing anatomical visualization software, self-administered practice examinations, as well as by having access to e-mail and many online medical information resources. Students complete much of their course write-ups in the Center, where they have access to word processing programs and printers. MACC offers audiovisual support for course material and Scantron grading services in addition to managing and supporting the computer systems in the Student Training Center.

Continuing Medical Education

Bonnie Carroll, Director (949) 824-9163

Elena Gilliam, Regularly Scheduled Conference Manager (949) 824-4220

The Office of Continuing Medical Education provides educational activities to physicians and other health care professionals to reinforce basic medical knowledge, improve competency, and enhance performance-in-practice and outcomes of patient care. Additionally, these activities impart updated information on clinical practice and health care delivery; introduce new ideas, skills, and technology; and disseminate pertinent research findings. The program encompasses a broad and comprehensive range of topics based on identified gaps in the needs of the communities served. As an academic center of excellence that includes the UC Irvine Medical Center, emphasis is placed on the identification of areas for improvement through the system's Quality Improvement Department for which CME is a change-agent.

Graduate Medical Education

Russell Williams, M.D., Associate Dean (714) 456-3526

Nancy Koehring, Director, Postgraduate Medical Education and Community Programs (714) 456-3526

The UCI School of Medicine Graduate Medical Education Training Programs attract medical students from prestigious medical schools nationwide. UCI offers 42 ACGME-approved residency and fellowship training programs. There are approximately 600 residents and fellows in these training programs. UC Irvine Medical Center, Veterans Affairs Long Beach Healthcare System, and Long Beach Memorial Medical Center are the integrated training sites for the residency programs. Other affiliations such as Kaiser Anaheim, Kaiser Riverside, Western Medical Center, City of Hope, Children's Hospital of Orange County, and Children's Hospital Los Angeles offer additional residents training in specialized fields.

POSTGRADUATE EDUCATIONAL PROGRAMS

Residency Programs

The School of Medicine and its affiliated hospitals offer approximately 650 residency positions in almost all areas of medicine. Training levels range from first-year residencies through seventh-year-level subspecialty fellowships. Inquiries about specific programs should be directed to the Program Director as listed in the *Directory of Residency Training Programs,* published each year by the American Medical Association, or to the chair of the appropriate School of Medicine department.

All residency programs meet the formal standards of the Accreditation Council for Graduate Medical Education and the appropriate specialty boards. UCI adheres to the Health Professions Educational Assistance Act of 1976, P.L. 94-484, Section 709, regarding shared-schedule residency training positions.

Residents in all programs rotate to UC Irvine Medical Center at some time. Residents in anesthesiology, dermatology, diagnostic radiology, medicine, neurology, ophthalmology, pathology, surgery, physical medicine and rehabilitation, radiation oncology, family medicine subspecialties of medicine, orthopaedics, otolaryngology, urology, and psychiatry also rotate to the Veterans Affairs Long Beach Healthcare System. Residents in medicine, medicine subspecialities, anesthesiology, radiation oncology, psychiatry, obstetrics and gynecology, pathology, pediatrics, physical medicine and rehabilitation, plastic surgery, and surgery also rotate to the Memorial Hospital Medical Center/Miller Children's Hospital in Long Beach.

In 2009, UCI established an affiliation with the Children's Hospital of Orange County (CHOC), which will be a major training site for a combined program in pediatrics. Residents may also spend periods of time at other affiliated hospitals and clinics.

ANESTHESIOLOGY

The Anesthesiology Residency Program is a five-year accredited categorical program. It offers training for residents at the postgraduate PG-1 to PG-4 levels. The residents spend a PGY-1/Clinical Base Year in intensive medical/surgical training at Long Beach Memorial Medical Center, Veterans Affairs Long Beach Healthcare System, and UC Irvine Medical Center. The PGY-2 through PGY-4 years involve broad clinical training at the UC Irvine Medical Center as well as rotations in affilates at Children's Hospital of Los Angeles (two months), Cedars-Sinai Medical Center (two months), Long Beach Memorial (two months) and the Veterans Affairs Long Beach Healthcare System (two months). Training is offered in general anesthesia, regional anesthesia, cardiac anesthesia, pediatric anesthesia, trauma anesthesia, neurosurgical anesthesia, ambulatory anesthesia, obstetric anesthesia, intensive care, and pain management. Electives in subspecialty training in obstetrical anesthesia, critical care medicine, pediatric anesthesia, pain management, cardiac anesthesia, or research are offered as part of the PGY-4 year.

DERMATOLOGY

The Department of Dermatology offers a three-year accredited residency which has fifteen residents, five for each of three postgraduate years. Residents rotate through clinics at UC Irvine, the Veteran Affairs Long Beach Healthcare System, and Kaiser Permanente and receive extensive training in medical and surgical dermatology and are active in research projects. Residents rotate through specialty clinics which see patients with immunobullous disease, pigmentary disorders, venous disease, vascular birthmarks, pediatric disorders, and melanoma. Residents receive extensive training in Mohs surgery, laser techniques, excisional surgery, performance of flaps and grafts, and administration of cosmetic agents. Residents present at local, national, and international meetings.

EMERGENCY MEDICINE

The Emergency Medicine residency was established in 1988 and has full accreditation by the Residency Review Committee. The program has 18 residents, six for each of three postgraduate years. The UC Irvine Medical Center Emergency Department is a high-acuity, Level I Trauma Center, treating over 39,000 patients annually. Thirteen board-certified emergency medicine faculty provide 24-hour patient care and supervision of residents and medical students. The Department of Emergency Medicine is active in disaster preparedness and response, emergency uses of ultrasound imaging, public affairs, community service, and research in the areas of prehospital care, instructional methods, trauma, health policy, and infectious disease, among others.

FAMILY MEDICINE

The mission of the Family Medicine Residency Program is to train family physicians to succeed in a contemporary practice environment and to deliver high-quality medical care to a culturally and socioeconomically diverse patient population. This fully accredited program boasts 27 residents and offers training in a variety of settings. The residents' continuity clinic is located in the largest community clinic in Orange County, and residents participate in a number of community outreach activities. The world-class faculty act as teachers and mentors to the residents and teach them important principles to help them succeed as professionals. The residency program is a leader in a variety of curricular endeavors including school outreach, training residents how to teach, the business of medicine, sports medicine, and much more. The hundreds of successful residency graduates in the local area are a testament to the program's ongoing efforts to train outstanding family doctors.

GERIATRICS

The Geriatrics Fellowship is a comprehensive one-year training program that has been accredited since 1991, providing eligibility for Geriatric Medicine specialization for Internal Medicine and Family Medicine physicians. Fellows receive training at UC Irvine Medical Center as well as affiliated sites, including Veterans Affairs Long Beach Healthcare System, and alternative community care environments for seniors. Fellows have longitudinal experiences in high-quality skilled nursing facilities, assisted living facilities, a comprehensive, multidisciplinary assessment program, and primary care practices. Clinical training in geropsychiatry is provided in a 17-bed geropsychiatry unit located at UC Irvine Medical Center, as well as in an outpatient setting.

INTERNAL MEDICINE

The internal medicine residency program is a traditional three-year training program and also sponsors a one-year preliminary program. The program focuses on core educational skills of the internist and offers pathways for primary care, hospitalist medicine, and research. Residents rotate through UC Irvine Medical Center, the Veterans Affairs Long Beach Healthcare System, and Long Beach Memorial Medical Center. Core program faculty have a special interest in academic internal medicine and education. Subspecialty fellowships are offered in basic and clinical immunology, cardiology, endocrinology and metabolic diseases, gastroenterology, hematology/oncology, infectious diseases, nephrology, pulmonary/critical care diseases, and rheumatology.

INTERVENTIONAL RADIOLOGY

The Department of Radiological Sciences offers a one-year, clinically oriented fellowship in Interventional Radiology. Training in this discipline involves a broad range of vascular and interventional radiology procedures including interventional CT and Ultrasound. The fellow will also have the opportunity and option to participate in neuroradiological procedures including neurovascular intervention. The fellow is encouraged to participate in ongoing research projects and publications. The Vascular and Interventional Fellowship Program at UCI is ACGME accredited.

MEDICAL GENETICS

UCI offers two Medical Genetics residency training programs. The first is a two-year categorical Medical Genetics residency that is straight Medical Genetics and requires prior satisfactory completion of 24 months of the ACGME-accredited residency training in a specialty other than Medical Genetics. At the end of the program a trainee should be eligible to take the American Board of Medical Genetics (ABMG) examinations. The second program is a five-year combined Pediatrics/Medical Genetics training program that devotes two and one-half years each to Pediatrics and to Medical Genetics. Usually, the first year is all Pediatrics, the last year is all Medical Genetics, and the middle three years alternate between Pediatrics and Medical Genetics for periods of three–six months each. After successful completion of the program the trainee will be eligible to take both the Pediatrics boards and the Medical Genetics boards. The number and content of genetics rotations that the combined Pediatrics/Genetics residents do are identical to those of the categorical genetics residents except that there is an additional six months of genetics time that is expected to be devoted to research or to training in a specialized area of genetics in which the resident intends to devote his or her career. This extra is flexible but must be spent in academic pursuit. Training utilizes three teaching hospitals: UC Irvine Medical Center, Children's Hospital of Orange County, and Long Beach Memorial Medical Center/Miller Children's Hospital. Research offices and laboratories are on the UCI main campus.

NEONATAL-PERINATAL MEDICINE

UCI offers a three-year fellowship in Neonatal-Perinatal Medicine, accredited by the Accreditation Council for Graduate Medical Education (ACGME). The program provides a well-rounded curriculum that balances between clinical experiences, teaching opportunities, and academic and scientific activities. The program offers variety and depth due to the diversity of the two major training sites—UC Irvine Medical Center and Long Beach Memorial Medical Center/Miller Children's Hospital. The care of newborns seen through the two hospitals represents a cross-section of racial, cultural, and socioeconomic groups from a local population of more than 2.5 million. These two sites represent a broad-spectrum of neonatal practice and offer excellent opportunities to learn and teach. Clinical and basic science research conducted by the faculty in the section gives the fellow the ability to gain skills in scientific investigation. The program's superb physical environment, extraordinary clinical services, and varied research interests permit the faculty to carry out the mission of preparing neonatal fellows for a career in clinical or academic neonatology. In addition, the program collaborates clinically and through research with a superb fellowship training in Maternal-Fetal Medicine that is also based at the two institutions. The Neonatal-Perinatal Medicine Fellowship training consists of 14 months of direct patient care responsibilities, 19 months of research training, and three months of vacation.

NEUROLOGY

Neurology residency training focuses on the development of strong clinical skills to competently evaluate and treat the large number of disorders that afflict the nervous system. During three years of training at UCI, residents have the opportunity to see a wide variety of neurological conditions and receive progressively more responsibility. The program provides a rich, intellectually stimulating environment in which to learn. UCI Neurology faculty all have broad experience caring for neurological disorders and have special expertise in different neurological disciplines. Residents have opportunities to work in many different subspecialty areas with the faculty. The neurology residency program is big enough to provide a rich environment to learn about neurological disorders, yet remains small enough for residents to work closely with each faculty member. Residents are encouraged to learn at every opportunity: from patients, peers, the faculty, and visiting experts. There are many formats in which to learn, from bedside discussions, tutorials, to specially prepared lectures. To further stimulate intellectual growth, residents are actively encouraged to pursue research in any topic of their choosing, with the guidance of the faculty.

NEUROSURGERY

The UCI Residency Program in Neurosurgery is a rigorous training program designed to develop academic neurosurgeons. There are ample opportunities for both clinical and basic research within the Department and in collaboration with other laboratories or departments at UCI. Applicants are expected to have a strong academic record with a strong commitment to neurosurgery. One candidate is selected for each program year. Exact order of clinical rotations may vary slightly subject to the trainee's previous experience and needs as well as the training program circumstances, however, the rotation generally proceeds as follows: the PGY-1 year is a nine-month general surgery rotation with three-months of neurology; PGY-2 is one year of training at UC Irvine Medical Center; PGY-3 is a six-month rotation at Kaiser Permanente, Anaheim, followed by three-months of neuropathology and three-months of neuroradiology at UC Irvine Medical Center; PGY-4 is a six-month rotation at Children's Hospital of Orange County (CHOC) and a six-month rotation at Kaiser Permanente, Anaheim; PGY-5 is a research year; PGY-6 is a three-month rotation at Hoag Memorial Presbyterian Gamma Knife Center for stereotactic radiosurgery and a three-month elective (Interventional Radiology or Spine) at UC Irvine Medical Center and a six-month rotation at CHOC; PGY-7 is the chief resident year and will be at UC Irvine Medical Center. Invitations to interview for these positions are based on the candidate's academic record, National Board scores, publications, letters of recommendation, and a personal statement.

OBSTETRICS AND GYNECOLOGY

This four-year program provides a solid foundation in Obstetrics and Gynecology with emphasis in the reproductive pathophysiology in the many different areas of women's health care. Based on this foundation, training continues with progressive resident responsibility for operative and medical management and surgical techniques. While predominantly clinical in scope, the program is strongly flavored by academic and research exposure. Training is provided in general obstetrics and gynecology with rotations in the subspecialties of perinatology, urogynecology, family planning, gynecologic oncology, and reproductive endocrinology. There are six resident positions available each year in this four-year training program.

OPHTHALMOLOGY

The three-year Ophthalmology Residency Program provides extensive clinical and surgical experience coupled to an excellent weekly didactic curriculum. The program provides a broad spectrum of ophthalmic disease management with extensive exposure and surgical experience in the full range of ophthalmology subspecialties. Residents have rotations in cornea and refractive surgery, vitreoretinal surgery, oculoplastic and orbital surgery, glaucoma, pediatric ophthalmology and strabismus, ophthalmic pathology, and neuro-ophthalmology, in addition to comprehensive ophthalmology clinics. Residents also receive instruction and practical application in the newest laser surgical techniques as well as the use of state-of-the-art diagnostic equipment.

ORTHOPAEDIC SURGERY

The Department of Orthopaedic Surgery Residency Program is a four-year training program which follows an internship year in the Department of General Surgery. The program is designed to provide intense exposure and experience in all areas of orthopaedics including trauma, reconstructive and joint replacement surgeries, pediatric orthopaedics, spine surgery, sports medicine, foot surgery, and rehabilitation. It is structured for maximum resident participation with an emphasis on personalized mentorship. The program's teaching hospitals include UC Irvine Medical Center, Veterans Affairs Long Beach Healthcare System, Children's Hospital of Orange County, and Kaiser Permanente Medical Center in Anaheim. There are four resident positions available each year.

OTOLARYNGOLOGY—HEAD AND NECK SURGERY

The Department of Otolaryngology—Head and Neck Surgery offers a five-year residency program providing comprehensive training in otolaryngology to prepare trainees to sit for the American Board of Otolaryngology Examinations. The five-year program provides a breadth of training in otological surgery, head and neck surgery, facial plastic surgery, pediatric otolaryngology, and nasal and paranasal sinus surgery. Residents receive an extensive clinical experience at UC Irvine Medical Center, Children's Hospital of Orange County, Veterans Affairs Long Beach Healthcare System, and Kaiser Foundation Hospital–Anaheim. Acceptance is through application and successful matching through the National Residency Matching Program. The program follows requirements set by the Accreditation Council for Graduate Medical Education.

PAIN MEDICINE

The Fellowship Training Program in Pain Medicine at the UC Irvine Medical Center is an intensive one-year ACGME-accredited multidisciplinary training program sponsored by the Department of Anesthesiology and Perioperative Care. The fellowship boasts a multidisciplinary faculty with both Anesthesiology and Physical Medicine and Rehabilitation leadership. The program trains fellows who have completed a residency training program in Anesthesiology, Physical Medicine and Rehabilitation, Neurology or Psychiatry, although applicants from other fields may also apply. Truly interdisciplinary, the fellowship teaches interventional pain management, opioid and adjunctive medication management, as well as non-interventional pain management. Personalized physical and occupational therapy, off-loading therapy, electroacupuncture, electrodiagnostics, psychologic and cognitive therapies, and regional anesthesia are common treatment modalities at UCI that are also taught during the fellowship. The fellows also rotate through rehabilitation medicine, anesthesiology, neuroradiology, palliative care, neurology, and psychiatry.

PATHOLOGY

The Department of Pathology and Laboratory Medicine offers a residency training program covering all areas of anatomic and clinical pathology. The program is affiliated with Long Beach Memorial Medical Center and Veterans Affairs Long Beach Healthcare System. The training for the combined anatomic and clinical pathology program consists of four years of training in both anatomic and clinical pathology. The first three years consist of a core program providing exposure to each of the subspecialty areas of clinical pathology as well as surgical pathology, autopsy pathology, and cytopathology. Ample opportunities for research and teaching exist for individuals planning on an academic career. Excellent preparation is also provided for individuals planning on a career in forensic pathology or private practice in a community hospital.

PEDIATRICS

The Pediatric Residency Program emphasizes the interrelationship of patient care, didactic teaching, and research in the training of the pediatric resident physician. The focus is on the total care of the child from birth through young adulthood. A strong clinical and educational foundation is provided through experiences in a broad spectrum of disease and/or injury as well as training in biosocial pediatrics, preventive health care, and community resources.

The program offers variety and depth due to the diversity of the Department's major teaching hospitals—Children's Hospital of Orange County, Miller Children's Hospital (located at Long Beach Memorial Medical Center), and UC Irvine Medical Center. The faculty at these institutions provides a comprehensive teaching program in general pediatrics and cover the full range of pediatric subspecialties. The care of children seen through the two hospitals represents a cross-section of racial, cultural, and socioeconomic groups from a local population of more than 2.5 million. Thus, pediatric residents are exposed to a wide range of problems presented in settings ranging from intensive care to supervised office-based practice.

PHYSICAL MEDICINE AND REHABILITATION

The Department of Physical Medicine and Rehabilitation offers a three-year residency for applicants who have completed a one year internship. The focus is on the diagnosis and comprehensive treatment and care of patients with neuromusculoskeletal or cardiopulmonary disabilities, from newborns to the elderly. Residents are also involved in research and medical student teaching.

PLASTIC SURGERY

The Aesthetic and Plastic Surgery Institute of UCI has a fully integrated residency program. The program currently accepts two residents for a six-year educational training experience in Plastic Surgery. The goals and objectives of this program are to educate plastic surgeons who are analytical and scholarly in their approach to surgical problem solving, broadly experienced in all fields of the specialty, safe in their application of judgment and technique, and ultimately self-educating in a lifelong continuing medical education process. The goals and teaching philosophy are based on the graduate school model, which emphasizes analytic problem solving, scholarly use of the knowledge base and scientific resources of the field, development of judgment skills, and identification of educational tools that produce the ability to self-direct one's lifelong professional education in a scholarly manner. At the successful completion of this program, candidates will be able to sit for their boards in Plastic Surgery.

PREVENTIVE MEDICINE

This residency program is offered by the Division of Occupational Medicine, Department of Medicine. It is intended for physicians who are seeking certification by the Board of Preventive Medicine. A prerequisite to participation is a minimum of one year of postgraduate clinical training in a primary care discipline. The objective of the program is the training of physicians in the fields of occupational medicine and industrial medical care. The resident is provided an academic foundation in occupational medicine, industrial hygiene, environmental toxicology, and epidemiology, in addition to practical experience in preventive medicine as it is applied to employed persons. This two-year program includes didactic training and clinical and field experience in occupational health and safety. Upon completion of training, the resident is qualified to enter the specialty practice of occupational medicine in an industrial setting, in private practice, in a government agency, or in an academic institution.

PSYCHIATRY

The Psychiatry Residency Training Program is a four-year program that fosters academic excellence and broad clinical experience in general psychiatry. Residents receive extensive supervised training in both psychotherapy and psychopharmacology. The core curriculum includes didactic seminars and supervised clinical experiences in the following areas: adult inpatient and outpatient psychiatry, child psychiatry, geriatric psychiatry, primary care, neurology, emergency psychiatry, consultation and liaison psychiatry, forensic psychiatry, and substance abuse. Residents rotate at the UC Irvine Medical Center, the Veterans Affairs Long Beach Healthcare System, and Orange County Behavioral Health. Elective rotations are also available at the UC Irvine Outreach Clinics, Kaiser Permanente, the Orange County Rescue Mission, and Long Beach Memorial Medical Center. The flexible curriculum allows residents to pursue elective interests in research, teaching, and administrative psychiatry. The program includes a broad array of full-time, part-time, and volunteer clinical and research faculty, and maintains a teaching affiliation with the New Center for Psychoanalysis.

RADIOLOGICAL SCIENCES (DIAGNOSTIC RADIOLOGY)

The Department of Radiological Sciences has an ACGME-approved four-year residency program based at UC Irvine Medical Center and integrated with Veterans Affairs Long Beach Healthcare System. There is also a month-long Pediatric Radiology rotation at Children's Hospital of Los Angeles. The objectives of the program are (1) to train competent radiologists with a solid background in all modalities of imaging and interventional procedures, (2) to provide a conducive atmosphere and to encourage opportunities for residents to participate in translational and basic science research, and (3) to provide elective periods in which residents have the opportunity to increase their clinical radiology expertise or to work on research projects during their residency training. The residency program includes sub-specialized training in interventional, cardiothoracic, abdominal, pediatric, musculoskeletal radiology, as well as breast imaging, neuroradiology, and molecular imaging. Residents are exposed to a variety of modalities including radiography, fluoroscopy, computed tomography (CT), magnetic resonance imaging (MRI), ultrasonography, mammography, nuclear medicine, and spectroscopy. All residents participate in scholarly activities and are encouraged to complete at least one major research project during the program. The program provides a month-long research time. Candidates are accepted for six positions at the PGY-2 level for the four-year program. Fellowships are available for an additional year in specialized areas following the successful completion of the residency. The newest technologies in the field of radiological sciences are available at UC Irvine Medical Center and affiliated institutions.

RADIATION ONCOLOGY

The Residency Training Program in Radiation Oncology is designed to prepare suitably qualified applicants for academic and clinical practice careers in radiation oncology. Candidates enter a four-year program which includes clinical experience, didactic lectures and integrated research experience. Unique opportunities exist for training in the use of interstitial and intracavitary treatment using radionuclides and specially designed applicators as well as a variety of high-dose external beam technologies such as IMRT, radiosurgery, and VMAT/IMAT. The program includes rotations at three participating hospitals: UC Irvine Medical Center, Veterans Affairs Long Beach Healthcare System, and Long Beach Memorial Medical Center.

SURGERY

The philosophy underlying all aspects of surgical training is that surgery is best learned, taught, and practiced as applied clinical physiology. Operative techniques and applied anatomy receive appropriate attention. Major portions of clinical experience, teaching, conferences, research, and patient care are oriented toward understanding and correcting disordered human biology. The surgical specialty involves more years of training than other medical disciplines due to the breadth of diseases and complexity of pathophysiology involved in surgery. The Department offers residencies in general surgery, plastic surgery, and urology.

UROLOGY

The Department of Urology Residency Program is a six-year training program that includes a one-year internship in the Department of Surgery and five years of Urology training. The residency program provides training in all aspects of adult and pediatric urologic diseases. The residents receive extensive training in open and endoscopic procedures, laparoscopy and other minimally invasive techniques, urologic pathology, uroradiology, and management of non-operative urologic conditions. The program's training hospitals include UC Irvine Medical Center, Veterans Affairs Long Beach Healthcare System, Kaiser Permanente Anaheim, and Children's Hospital of Orange County. The Urology Department encourages and supports both clinical and basic science research.

GRADUATE ACADEMIC PROGRAMS

The School of Medicine's basic medical science departments of Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, Pathology and Laboratory Medicine, and Physiology and Biophysics participate jointly with the School of Biological Sciences in offering graduate instruction leading to the M.S. and Ph.D. degrees in Biological Sciences. The Department of Medicine and the Department of Pharmacology offer M.S. and Ph.D. programs. The Department of Pediatrics offers an M.S. degree in Genetic Counseling. The Department of Epidemiology participates with the School of Social Ecology in offering a concentration in Epidemiology and Public Health, within the Ph.D. degree in Social Ecology.

Application materials may be obtained by contacting the individual graduate programs or:

University of California, Irvine
Graduate Division
120 Aldrich Hall
Irvine, CA 92697-4611
(949) 824-6761

http://www.rgs.uci.edu/grad/

Anatomy and Neurobiology

364 Medical Surge II; (949) 824-6050
anatomy@uci.edu; http://www.ucihs.uci.edu/anatomy/index.html
Ivan Soltesz, **Department Chair**

Faculty

Aileen J. Anderson: Mechanisms of neurodegeneration and inflammation after central nervous system injury
Tallie Z. Baram: Developmental neurobiology of excitation and excitotoxicity; CNS mechanisms of stress response
Robert H. Blanks *(Emeritus)*: Vestibular physiology and anatomy
Anne L. Calof: Developmental neurobiology; molecular mechanisms of neurogenesis and programmed cell death
Steven C. Cramer: Mapping and treating neurorecovery in humans
Brian Cummings: Spinal cord injury and repairs; neurobiology of stem cells
James H. Fallon *(Emeritus)*: Human and molecular brain imaging, growth factors and adult stem cells in injured brain
Mark Fisher: Mechanisms of stroke
Christine M. Gall: Regulation of neuronal gene expression; neurotropic factors
Roland A. Giolli *(Emeritus)*: Experimental neuroanatomy; visual system
Alan L. Goldin: Ion channels and CNS disease
Ranjan Gupta: Peripheral nerve injury
Hans S. Keirstead: Axon and myelin regeneration following spinal cord injury
Herbert P. Killackey: Developmental neuroanatomy; somatosensory system
Leonard M. Kitzes *(Emeritus)*: Auditory system physiology and development
Robert Leonard: Clinical anatomy education
Frances M. Leslie: Effects of drugs of abuse on central nervous system development
Gary Lynch: Brain aging; synaptic plasticity
David C. Lyon: Anatomy and physiology of visual cortex and thalamus
Diane K. O'Dowd: Regulation of neuronal excitability; development of functional synaptic connections
Charles E. Ribak: Changes in neural circuitry in the epileptic brain
Richard T. Robertson: Developmental neurobiology
Steven S. Schreiber: Mechanisms of neural reorganization in CNS after injury and therapeutic applications
Martin A. Smith: Cellular and molecular mechanisms of synapse formation
Ivan Soltesz: Modulation of CNS inhibition
Oswald Steward: Mechanisms of recovery from injury
John E. Swett *(Emeritus)*: Peripheral nervous system, spinal cord, pain mechanisms
John H. Weiss: Mechanisms of neural degeneration
Xiangmin Xu: Local inhibitory cortical circuits
Fan-Gang Zeng: Auditory prostheses

Research programs in the Department of Anatomy and Neurobiology in the School of Medicine focus on the neurosciences. Faculty interests range across all areas of basic and clinical research including cellular and molecular neurobiology, mechanisms of development, ion channel physiology, experimental neuroanatomy, structure and function of sensory and motor systems, response to injury and regeneration. The Department maintains facilities for electron microscopy, laser confocal microscopy, and computer-based imaging and informatics. Students performing graduate work in the Department are encouraged to become proficient in multiple areas of study using interdisciplinary techniques.

The Department offers graduate training under the auspices of the School of Biological Sciences in conjunction with the Interdepartmental Neuroscience Program (INP). Students are eligible to enter the Department program only after meeting the specific requirements of the INP gateway curriculum. The Department program leads to a Ph.D. degree in Biological Sciences, awarded after successful completion of all requirements.

In concert with other departments, a combined neuroscience core curriculum has been developed which includes offerings in systems neurobiology, neurophysiology, and cellular, molecular, and developmental neurobiology that may be taken as complete or partial fulfillment of the requirements of the INP. Students admitted into the INP who subsequently select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year. Students may take additional elective courses at their own option, but are strongly encouraged to attend departmental seminars and participate in the Journal Club and an annual "Grad Day" symposium. The research topic for a student's dissertation is chosen by the student in consultation with the research advisor. Students are expected to advance to candidacy by the end of the third year by presenting and defending a proposal for their research dissertation. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Course descriptions may be found in the School of Biological Sciences section.

Biological Chemistry

Building D, Room 240, Medical Sciences I; (949) 824-6051
Robert E. Steele, **Interim Department Chair**

Faculty

Bogi Andersen: Transcriptional regulation in epithelial tissues
Pierre Baldi: Computation biology, bioinformatics, probabilistic modeling, machine learning
Phang-Lang Chen: Signal transduction in response to DNA damage and tumor genesis
Xing Dai: Transcriptional/chromatin control of epithelial stem cells
Peter Donovan: The mechanisms by which pluripotent stem cells are formed in the embryo and the uses of such stem cells for transplantation therapy of human disease
John P. Fruehauf: Regulatory elements in cancer-related angiogenesis: prognosis and therapeutic targeting
Anand Ganesan: Disorders of pigmentation and melanoma
Sergei Grando: Non-neuronal cholinergic system
Peter Kaiser: Cell cycle regulation by ubiquitin
Eva Y.-H. P. Lee: Breast cancer etiology and DNA damage checkpoint control
Wen-Hwa Lee: Molecular cancer genetics, mainly the mechanism of tumor suppressor gene functions, cancer progression and novel therapy
Ellis R. Levin: The plasma membrane estrogen receptor (ER) and its effects on the biology of estrogen action
Haoping Liu: Signal transduction, cell cycle regulation, hypha development in yeast
Leslie Lock: Mammalian embryonic stem cells in studies of development and human disease
Frank Meyskens: Carcinogenesis and molecular biology of melanoma and chemoprevention of human cancer
Masayasu Nomura: RNA polymerase I, the nucleolus, and ribosome synthesis in yeast
Daniele Piomelli: Biochemistry and pharmacology of the endogenous cannabinoids and other lipid signaling systems
Suzanne B. Sandmeyer: Retrovirus-like elements in yeast
Robert E. Steele: Evolution of multicellular animals and their genomes
Leslie Michels Thompson: Molecular/biochemical analysis of multiple myeloma and Huntington's disease
Douglas C. Wallace: Molecular and mitochondrial medicine and genetics
Kyoko Yokomori: Chromosome structure organization and its role in genome function and stability
Yi-Hong Zhou: Tumor suppression pathways and molecular prognosis of brain tumors

Faculty research interests in the Department of Biological Chemistry are in the structure and function of chromosomes, signal transduction and its role in cell growth and differentiation control, regulation of gene expression (transcription, protein synthesis, and protein localization), and the molecular basis of development. Genome sequencing projects are making it possible for faculty to exploit information learned about gene function in model organisms for understanding human disease processes. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering and gene mapping. A newly established atomic force microscopy facility is available for structure research. Researchers in the Department are also using DNA microarray technology,

next-generation sequencing, and bioinformatics to understand global changes in gene expression in response to the environment.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Cellular and Molecular Biosciences (CMB), which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin thesis research in the second year. Students are required to attend and participate in the departmental research seminars. In addition, students are required to complete three advanced-level graduate courses subsequent to entering the Department's Ph.D. concentration. In the third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Course descriptions may be found in the School of Biological Sciences section.

Environmental Toxicology

10 Faculty Research Facility; (949) 824-8642
http://www.ucihs.uci.edu/som/envtox
Alpesh Amin, **Interim Chair, Department of Medicine**

Faculty

Dean B. Baker: *Chief, Division of Occupational and Environmental Medicine;* Environmental medicine and clinical toxicology; epidemiology; clinical effects of heavy metals, pesticides, and hazardous waste

Stephen C. Bondy: Neurotoxicology; biochemical changes in membranes resulting from toxic exposures

Jefferson Y. Chan: Chemical pathology of tissue injury with focus on the oxidative stress response in cells exposed to toxic xenobiotics

Derek Dunn-Rankin: Laser and optical diagnostics in practical systems, optical particle sizing; droplet formation and vaporization in high-pressure environments

C. Sunny Jiang: Application of molecular techniques to detect human pathogenic bacteria and viruses in aquatic environments; coastal water quality microbiology

Michael T. Kleinman: Uptake and distribution of inhaled toxic materials in the respiratory tract; effects of air pollutants on cardiopulmonary function

Ulrike Luderer: Reproductive and developmental toxicology

Betty H. Olson: Environmental microbiology and water chemistry; public policy issues in environmental toxicology

Kathryn E. Osann: Cancer epidemiology; biostatistics

Robert F. Phalen: Biophysics, aerosol science, and inhalation toxicology; toxicity of mixtures of particles and gases, lung defenses, and particle deposition in airways.

J. Leslie Redpath: Studies on the chemical and physical modification of radiation damage aimed at basic research in carcinogenesis

Ronald C. Shank: *Graduate Program Director;* Biochemical mechanisms in toxic tissue injury with emphasis on chemical carcinogenesis; application of tools of molecular biology to study cytotoxicity

The Division of Occupational and Environmental Medicine in the Department of Medicine provides graduate training in environmental toxicology and offers the M.S. and Ph.D. degrees in Environmental Toxicology. The program in Environmental Toxicology provides students with the knowledge and skills necessary and appropriate to teach and/or conduct basic and applied research programs in inhalation/pulmonary toxicology, environmental carcinogenesis, biochemical neurotoxicology, chemical pathology, toxicokinetics, radiation toxicology, bioremediation, and risk assessment. NOTE: Please contact the Department office for information regarding admission to the Ph.D. program.

Toxicology involves scientific study of the entry, distribution, biotransformation, and mechanism of action of chemical agents harmful to the body. The program interprets environmental toxicology as the study of the effects and mechanisms of action of hazardous chemicals in food, air, water, and soil, in the home, workplace, and community, and considers experimentally and theoretically such diverse research problems as (1) new scientific approaches to toxicological evaluation of environmental chemicals such as air and water pollutants, food additives, industrial wastes, and agricultural adjuvants at the molecular, cellular, and organism levels; (2) mechanisms of action in chemical carcinogenesis and mutagenesis; (3) the molecular pathology of tissue injury in acute toxicity; and (4) scientific principles involved in extrapolating from laboratory animal data to expected effects on human health in environmental exposures.

Students entering the program have varied backgrounds, including chemistry, biology, and physiology. The curriculum is based on a foundation of basic and health sciences with applications of scientific principles to environmental problems. Formal course work is enriched by a strong commitment to student-professor interaction throughout the program. An important and integral part of the learning process is an early and intensive involvement of the student in ongoing original research projects in environmental toxicology, especially inhalation/pulmonary toxicology, chemical carcinogenesis, biochemical toxicology, chemical pathology, and neurotoxicology.

In addition to meeting the general admission requirements set by the Graduate Division, applicants must be admitted by an Admissions Committee composed of faculty members from the Department of Medicine. Candidates are selected on the basis of a balanced evaluation of the following criteria: (1) prior scholastic performance, including a consideration of grade point average, course load, nature of courses taken, and college attended; (2) recommendations by professors and others; (3) scores on the Graduate Record Examination; the Subject Test in either Biology or Chemistry is strongly recommended; (4) an interview by the Admissions Committee, when feasible; and (5) experience in undergraduate research. The applicant must have received a bachelor's degree in a biological or physical science, in a premedical curriculum, or have an acceptable equivalent. Applicants with a bachelor's degree in engineering may qualify for admission into the program if they have had sufficient training in biology and chemistry.

Undergraduate preparation of applicants should include six quarter units in general biology, zoology, bacteriology, or anatomy; 12 quarter units in mathematics, including calculus through vector analysis and differential equations; 12 quarter units of chemistry, including four quarter units of organic chemistry; 12 quarter units of physics, including optics; and four quarter units in molecular biology or biochemistry. Outstanding applicants who lack one or two of these prerequisites may be given an opportunity to take the required course(s) either before admission or during the first year in the graduate program; in such circumstances, none of these undergraduate courses may be used to satisfy the program elective or core course requirements. Upper-division or graduate science courses may be considered as substitutes for the above prerequisites by the Admissions Committee.

The graduate core curriculum for the Ph.D. degree includes Environmental Toxicology 201, 206A-B, 207, 298A-B-C, and 16 units from an approved elective pool. This pool consists of Environmental Toxicology 202, 204, 212, 220; Physiology 206A-B; Anatomy 203A-B; Molecular Biology and Biochemistry 203, 204; and Developmental and Cell Biology 231B. Ph.D. students must also fulfill comprehensive examination, qualifying examination, teaching, and research dissertation requirements. The normative time for advancement to candidacy is three years. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, students complete the core program (including

Environmental Toxicology 201, 206A-B, 207, 298A-B-C, and 299A-B-C) and eight units from the approved elective pool with an average grade of B or better, and, under the direction of a faculty advisor, prepare a thesis that is acceptable to the thesis committee. Under Plan II, students complete the core program (Environmental Toxicology 201, 206A-B, 207, 290A-B-C, 298A-B-C, and eight units from the approved elective pool) with an average grade of B or better, prepare a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and satisfactorily pass the written comprehensive examination.

Opportunities for individual training and independent research experience exist in inhalation and pulmonary toxicology, atmospheric chemistry and aerosol science, chemical carcinogenesis, neurochemistry, biochemical toxicology, toxicology of naturally occurring compounds, chemical pathology, environmental microbiology, and environmental chemistry.

Research grants and contracts are available to support qualified doctoral students as research assistants.

GRADUATE COURSES IN ENVIRONMENTAL TOXICOLOGY

(Schedule of Classes **designation: Tox)**

201 Principles of Toxicology (4) S. Problem solving to demonstrate principles of toxicology; quantitative dose-response relationship; toxicant-target (receptor) interaction emphasizing interspecies differences in Ah receptor and dioxins; complete *in vivo* metabolism of xenobiotics by mammalian systems; integration of organ responses to toxic agents.

202 Environmental Toxicology (4) F. Analysis of real problems involving toxic chemicals and the human food, air, and water supplies, occupational exposures, and life styles. Formal problems will be considered by small groups of students and discussed by the class. Prerequisite: Environmental Toxicology 201.

204 Neurotoxicology (4) F, odd years. The effects of various harmful chemicals upon nervous system function. Emphasis given to the molecular events underlying neurological damage and to the relation of such processes to basic mechanisms of neurobiology.

206A-B Target Organ Toxicity (6-6) F, W. Analysis of responses occurring in twelve organ systems of humans exposed to environmental chemicals at toxic levels; distinctive cellular and tissue structure and physiological function; toxicological responses discussed in terms of phenomena, mechanisms of action, and methods of study.

207 Experimental Design and Interpretation of Toxicology Studies (2) W. Introduction to methods of structuring toxicology experiments and analyzing data including experimental design, data distributions, sample sizes, hypothesis testing, linear regression, analysis of variance, multiple comparison testing, and non-parametric tests.

212 Inhalation Toxicology (4) S, odd years. The principles and practice of laboratory inhalation toxicology. Topics include aerosols, gases, respiratory tract structure and function, lung defenses, aerosol deposition exposure techniques, characterization of exposure atmospheres, experimental designs, animal models, and regulations and guidelines.

220 Industrial Toxicology (4) S. Analysis of responsibilities toxicologists have in industry, including product safety, generating material safety data sheets, animal testing, ecotoxicological testing, risk/hazard communication, and assisting industrial hygienists and occupational physicians; emphasis on interdisciplinary nature of industrial toxicology and communication skills. Prerequisites: Environmental Toxicology 206A-B.

290 Independent Study in Environmental Toxicology (4) F, W, S. With consent from a faculty member who will supervise the program, a student may receive credit for individual study in some area of toxicology, culminating in the completion of a scholarly paper on the subject. May be repeated for credit as the topics vary.

297 Advanced Topics in Occupational Toxicology (2) F, W, S. Discussions with clinical and research faculty in environmental toxicology and occupational medicine on current toxicology problems in the workplace and critical review of current publications in the field. Journal club/seminar format.

298A-B-C Environmental Toxicology Seminar (2) F, W, S. Presentation and discussion of current research problems and issues by students, postdoctoral fellows, faculty, and guests, covering the broad research and policy areas of environmental toxicology. Open to Environmental Toxicology graduate students only.

299 Research Problems (1 to 12) F, W, S. Research work for the M.S. thesis or Ph.D. dissertation.

Epidemiology

Irvine Hall, Room 224; (949) 824-7401
http://www.epi.uci.edu; EpiGrad@uci.edu
Hoda Anton-Culver, **Department Chair**
Ralph J. Delfino, **Vice Chair for Research and Graduate Studies**
Christine E. McLaren, **Vice Chair for Academic Affairs**

Faculty

Hoda Anton-Culver: Genetic and cancer epidemiology; information systems facilitating the exchange of human cancer genetics information and resources, especially Cancer Registry Programs internationally, children's health and community research

Dean B. Baker: Environmental and occupational epidemiology; occupational medicine; toxicology; children's health; developmental toxicity; exposure, study design; occupational stress; asthma; pesticides; hazardous waste; environmental science; biological markers

Scott M. Bartell: Environmental and occupational epidemiology; probabilistic models and statistical methods, exposure assessment, risk assessment, and decision analysis

B. Dwight Culver *(Emeritus)*: Environmental epidemiology; environmental exposure to chemical and physical agents

Ralph J. Delfino: Environmental epidemiology; effects of community air pollutants on respiratory health and disease, especially asthmas and cardiovascular disease

Catherine Diamond: Clinical epidemiology and infectious diseases; antiretroviral therapy and AIDS-related NHL; HIV, AIDS, Kaposi's sarcoma, Herpes, American Indian, Youth, risky behavior, lipids

Rufus D. Edwards: Environmental epidemiology; health effects of air pollution, particles, VOC, developing world changes, greenhouse gas, European cities, Expolis project

Philip L. Felgner: Infectious disease epidemiology, protein microarray technology, biophysics, vaccines, gene therapy, drug delivery, and liposomes

Chad P. Garner: Biostatistics; theoretical and statistical methods for studying genetic and environmental determinants of common, complex human traits

Daniel L. Gillen: Biostatistics; survival analysis, longitudinal data analysis, clinical trials, sequential testing, and epidemiologic methods

Christine E. McLaren: Biostatistics; analysis of hereditary hemochromatosis

Leonard S. Sender: Cancer and genetic epidemiology, pediatric and adult hematology/oncology

Daniel S. Stokols: Design and evaluation of community and worksite health promotion; health and behavioral impacts of environmental stressors; application of environmental design research

James M. Swanson: Biochemical and genetic factors related to hyperactivity (ADHD), attention deficit disorders (ADD), and conduct disorder in children

David S. Timberlake: Genetic epidemiology: genetic basis for the use and misuse of licit and illicit substances and the study of genetic predisposition to behavioral disorders, such as antisocial personality disorder

Pathik D. Wadhwa: Behavioral perinatology; biobehavioral processes; stress; pregnancy; fetal development; prematurity; fetal programming of health and disease; psychoneuroendocrinology; psychoneuroimmunology

Nathan D. Wong: Chronic disease epidemiology, coronary calcium, metabolic syndrome, cardiovascular diseases and health prevention

Jun Wu: Environmental epidemiology: air pollution exposure assessment and air pollution epidemiology, maternal, perinatal and infant health

Jason A. Zell: Cancer epidemiology and prevention; focus on gastrointestinal cancers (colon, rectum, and pancreas)

Argyros Ziogas: Biostatistics; development of statistical methodology of doing family studies related to genetic (family-based) data, ascertainment bias, and gene-environment and gene-gene interactions related to cancer etiology

OVERVIEW

The Department of Epidemiology faculty research the genetic and environmental factors affecting the distribution of health and illness in large human populations. This serves as a cornerstone of the graduate program and the medical research program by utilizing highly evidence-based biostatistical methodologies to determine the risk factors leading to disease and optimal treatment approaches for clinical practice and medical interventions essential to preventative medicine and public health. In addition to the medical sciences, epidemiologist faculty have diverse research interest and rely on a number of other basic science disciplines including biological sciences (to understand the disease process), biostatistics (to evaluate large population data and develop research methods), geographic information science (to map disease patterns), and social science (to understand proximate and distal risk factors). The Department maintains facilities for research that include genetic, molecular, and biochemical techniques. The Department's excellent faculty in the School of Medicine has strong, peer-reviewed research portfolios and the extramural resources needed to support the Department's long-standing post-doctoral and doctoral training and education programs.

The Department of Epidemiology in the School of Medicine participates with the School of Social Ecology in offering a concentration in Epidemiology and Public Health, within the Ph.D. degree in Social Ecology. Students admitted into this program select a research advisor, typically in the Department of Epidemiology, and begin following the departmental requirements for the Ph.D. including approximately two years of course work dependant on their prior educational background. Students participate in the Epidemiology Journal Club, the departmental seminar series, and guest speaker seminars affiliated with the campus's Genetic Epidemiology Research Institute. In the fall of their third year, students are expected to have taken advancement-to-candidacy examinations in epidemiology and biostatistics and be prepared to present and defend a proposal describing their specific dissertation research. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years. Students who are interested in this concentration should apply to the Ph.D. degree program in Social Ecology. Additional details are available from the Department of Epidemiology Web site or by contacting the Department at EpiGrad@uci.edu or (949) 824-7325.

The Department does not offer a program of study leading to a M.S. degree nor an undergraduate degree, but does offer undergraduates the opportunity to gain research experience in epidemiology through the Department's 199 undergraduate research course in epidemiology. This course is available to all upper-division undergraduates irrespective of the individual major they have declared on campus.

COURSES IN EPIDEMIOLOGY

***(Schedule of Classes* designation: Epidem)**

UNDERGRADUATE

199 Undergraduate Research in Epidemiology (2 to 4). Provides disciplinary research participation. Original or existing research options provide undergraduates the opportunity for faculty/mentor interactions including access to appropriate facilities. Medical Epidemiology research areas: Cancer, Genetic/Molecular, Environmental, Occupational, Biostatistics, and Infectious Disease. Prerequisite: upper-division standing or consent of instructor. May be repeated for credit.

GRADUATE

200 Principles of Epidemiology (4). Fundamental principles of epidemiology, biostatistics, and epidemiological research. Topics include research methods of measuring health problems in populations, disease control and prevention in populations, how epidemiology contributes to knowledge of disease etiology, and biostatistical analysis and interpretation of epidemiologic data. Prerequisite: graduate standing or consent of instructor.

201 Cancer Epidemiology (4). Concentrates on understanding how epidemiology plays a role in the search for cancer etiology, prevention, control, and treatment; gives an overview of cancer research with an appreciation of the multidisciplinary nature of the field. Prerequisites: Epidemiology 203; graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E250/Public Health 201.

202 Genetic Epidemiology (4). Concentrates on the role of genetic factors in the etiology of disease in human populations with an objective of disease control and prevention, and the role of interactions of genetic factors and environmental exposures in the occurrence of disease. Prerequisites: Epidemiology 203; graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E251/Public Health 202.

203 Environmental Health Sciences III: Epidemiology (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease in the general population, as these approaches apply to populations using different student designs and models from the literature. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E226/Public Health 203.

204 Environmental Health Sciences V: Biostatistics (4). Designed to help students develop an appreciation for the statistician's view of the research process, emphasizing biomedical research. Instills an understanding of how statistical models are used to yield insights about the data that form evidence-based understanding of the world around us. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E227/Public Health 204.

205 Environmental Epidemiology (4). Concentrates on epidemiological approaches to the assessment of community environmental hazards; issues involved in environmental exposure estimation; interdisciplinary approaches to environmental epidemiology, including the use of biomarkers of exposures and susceptibility; epidemiological studies within the context of risk assessment. Prerequisite: graduate standing or consent of instructor.

215 Introduction to Statistical Genetics (4). Provides students with knowledge of the basic principles, concepts, and methods used in statistical genetic research. Topics include principles of population genetics, and statistical methods for family- and population-based studies. Prerequisites: two quarters of upper-division or graduate training in statistical methods. Same as Statistics 257.

217 Advanced Epidemiologic Methods (4). Advanced topics in the design and statistical analysis of epidemiologic studies. Topics include simulation methods, counter-matching and multiphase study designs, missing data, and Bayesian analysis. Published simulation studies are discussed and replicated using the R software package. Prerequisite: Public Health 101B or Statistics 111 or Statistics 211 or consent of instructor. Same as Public Health 205.

244 Toxic Chemicals in the Environment (4). Industrial ecology of toxicants and their impacts on environmental quality and human health. Explores theoretical basis of toxicity thresholds and regulatory issues. Uses classic and contemporary research articles to understand the legacy of traditional toxicants, and to identify emerging threats. Prerequisite: graduate standing or consent of instructor. Same as Public Health 276.

264 Environmental Health Sciences I: Introduction to Environmental Health Science (4). Convergence of agents (chemical, physical, biological, or psychosocial) in the environment can emerge as diseases influenced by social, political, and economic factors, allowing them to become rooted in society. How these agents from various spheres come together and impact human health. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E224/Public Health 264.

265 Environmental Health Sciences II: Advanced Environmental Health Science (4). Explores the complex relationships among exposure processes and adverse health effects of environmental toxins focusing on specific chemicals, sources, transport media, exposure pathways, and human behaviors. Techniques of environmental sampling for exposure assessment are discussed. Prerequisite: graduate standing or consent of instructor. Same as Environmental Health, Science, and Policy E225/Public Health 265.

269 Air Pollution, Climate, and Health (4). Emission of air pollutants into the atmosphere, physical and meteorological processes that affect transport, and influence on global warming. Concepts of how and where people are most exposed, and how exposures and health effects differ in developed and developing regions. Same as Public Health 269 and Environmental Health, Science, and Policy E247.

270 Human Exposure to Environmental Contaminants (4). Introduces founders of conceptual thought that environmental contaminants can impact health. Theory and principles of exposure assessment, the continuum from emissions of a contaminant into the environment to evidence of health effects in a population. Same as Environmental Health, Science, and Policy E248/Public Health 270.

275 Special Topics in Epidemiology (4). Presents various topics and latest research in the broad field of epidemiology. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

290 Introduction to Biostatistics and Epidemiology for Medical Fellows (4). Designed to prepare medical fellows and other physicians for rotations in research programs. Understanding of basic biostatistics and study design, and interdependencies between the two. Application of principles in evaluation of medical literature for guidance on patient care and public health policy. Prerequisites: medical degree and consent of instructor. Same as Environmental Health, Science, and Policy E229.

298 Directed Study in Epidemiology (2 to 4). Prerequisite: graduate standing or consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

299 Independent Study in Epidemiology (2 to 8). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

Genetic Counseling

City Tower, Suite 800, UC Irvine Medical Center; (714) 456-5789
Pamela Flodman, ***Acting Graduate Program Director***

Faculty

Maureen Bocian: Heterogeneity and variability in genetic diseases; characterization of new syndromes; neurofibromatosis; skeletal dysplasias
José A. Camacho: Genetic metabolic diseases
Pamela Flodman: Genetic epidemiology; human genome informatics; genetic counseling and risk perception
Kathryn Steinhaus French: Prenatal genetic diagnosis
John Jay Gargus: Genetic metabolic diseases; molecular genetics of cell membrane disorders
Taosheng Huang: Genetics of cardiovascular malformations; Holt-Oram syndrome
Virginia Kimonis: Characterization of disorders due to mutations in VCP and related myopathies associated with Paget disease of bone and dementia; natural history of Prader Willi and early onset morbid obesity syndrome; genotype-phenotype correlation in craniosynostosis
Robert Moyzis: Chromosome structure and gene expression; human telomere and centromere organization and function
Moyra Smith: Gene linkage and mapping in neurogenetic disorders including autism; mutation analysis and genotype-phenotype correlation in tuberous sclerosis
M. Anne Spence: Genetic epidemiology, quantitative genetics; linkage and mapping
Douglas C. Wallace: Mitochondrial genetics, evolutionary biology and metabolic disease
Michael V. Zaragoza: Genetics of cardiomyopathies in humans and mice

The Division of Human Genetics in the School of Medicine's Department of Pediatrics offers a Master of Science degree program in Genetic Counseling. Most graduates of the program join academic or hospital-based genetics teams providing clinical services, teaching, and research. Others work for local, state, or federal genetics programs, for commercial genetics laboratories, on genetic research studies, or in education. The graduate program is fully accredited by the American Board of Genetic Counseling.

Division faculty and staff are engaged in teaching, research, and patient service. Clinical activities center on diagnostic evaluation, management, and genetic counseling for genetic disorders, including birth defects, developmentally disabling conditions, and hereditary cancers. Faculty research interests include gene mapping and linkage analysis using molecular and quantitative methods; characterization and management of malformation and chromosomal syndromes; counseling for late-onset genetic conditions—including familial cancers and neurogenetic disorders; factors causing chromosome abnormalities and congenital malformations; cancer genetics and cytogenetics; psychosocial and cultural issues associated with genetic conditions, birth defects, prenatal diagnosis, genetic screening and testing, and genetic services delivery; and ethical and public policy issues in genetics.

During the six to eight academic quarters of the program, students complete a sequence of core courses covering medical, quantitative, biochemical, molecular, and cancer genetics; teratology, embryology, and development; cytogenetics; counseling theory and application; research methods; ethical issues; and community resources. All courses are taught by Division faculty specifically for students in the program. Experiential professional training occurs concurrently with formal course work in a variety of clinics at UC Irvine Medical Center and satellite facilities, in the prenatal diagnosis program, in the cytogenetics and molecular genetics laboratories, and in various community agencies. Students participate in these and other divisional and departmental professional and educational activities such as lectures, seminars, journal club, Pediatrics and Obstetrics and Oncology Grand Rounds, cytogenetics conferences, and various research, counseling, and patient management conferences throughout the program. While not required, some students choose to arrange optional clinical rotations at other academic, private, or commercial genetics units.

Degree requirements include a minimum of 75 quarter units, completion of a research thesis that should be publishable, and demonstration of appropriate professional skills in genetic counseling. The program director serves as faculty advisor to students. Teaching and supervision of professional experiential training are shared by all Division faculty and staff, who frequently review student progress. In the second year, development of professional skills can be individualized according to the trainee's needs and interests. Successful completion of the program fulfills the curricular and clinical training requirements for eligibility to sit for examination by the American Board of Genetic Counseling.

Recommended undergraduate preparation includes course work in the biological and behavioral sciences—particularly in genetics, biochemistry, molecular biology, psychology, and human development. Course work in statistics is desirable. Fluency in Spanish or a Southeast Asian language confers a considerable advantage. Extracurricular or employment experiences that provide evidence of the student's maturity, interpersonal skills, and promise as a genetic counselor figure prominently in the admissions decision. References should speak to these qualities as well as to the academic qualifications of the applicant. The GRE General Test and Writing Assessment are required. Subject Test scores in any area will also be considered if they are available. Since there is no GRE code for the Department of Pediatrics, applicants should use the UCI institution code: R4859.

Applications are accepted for the fall quarter only and must be complete by February 1. Because of keen competition for places in the program, a two-stage admissions process is employed. Following initial review of applications by the faculty admissions committee, approximately one-fifth of applicants are invited for interviews, which are usually conducted during March and April. If

invited, it is greatly to the candidate's advantage to have an on-site interview, although in difficult circumstances it may be possible to arrange an out-of-town interview with a program graduate or a traveling faculty member. Any candidate planning to be in the Southern California area in March or April is encouraged to inquire in advance regarding the likelihood of an interview. Final selection from the interviewed candidates occurs in late April or early May. Five or six students are usually admitted each year.

GRADUATE COURSES IN PEDIATRICS GENETICS

(Schedule of Classes **designation: Ped Gen)**

200A Introduction to Medical Genetics and Cytogenetics (4) F. Lecture, three hours. Covers current concepts regarding mitosis, meiosis, the cell cycle, and chromosome ultrastructure and function. Clinical disorders caused by chromosomal aneuploidy, duplication, and deletion, and principles of Mendelian, chromosomal, and multifactorial and nontraditional inheritance are presented and illustrated.

200B Genetic Screening, Prenatal Development, and Human Teratology (4) W. Lecture, three hours. Principles and techniques of prenatal, neonatal, and carrier screening. Infertility, pregnancy, and delivery. Normal and abnormal prenatal growth and development. Reproductive and fetal effects of drugs, radiation, infections, and other environmental factors. Prerequisite: Pediatrics Genetics 200A.

200C Human Genetic Disorders (4) S. Lecture, three hours. Inheritance, diagnosis, natural history, management, and counseling considerations for commonly encountered genetic diseases, birth defects, and dysmorphic syndromes. Prerequisites: Pediatrics Genetics 200A and 200B.

200D Disorders Due to Inborn Errors of Metabolism (4) F (even years). Lecture, three hours. Aspects of biochemistry and metabolism are reviewed with special emphasis on genetic abnormalities which lead to inborn errors of metabolism. Diagnostic procedures, heterozygote detection, treatment, counseling issues, and prenatal diagnosis are reviewed. Prerequisite: Pediatrics Genetics 200A or consent of instructor.

200E Molecular Genetics (4) S. Lecture, three hours. The derivation of different types of DNA probes and DNA libraries, restriction endonuclease polymorphisms, assignment of genes to chromosomes, and genetic linkage. Particular emphasis is placed on the use of recombinant DNA technologies and genetic linkage analysis for diagnosis of human genetic disease. Prerequisite: Pediatrics Genetics 200A, 200D, or consent of instructor.

200F Quantitative Genetics (2) S. Lecture, one and a half hours. Quantitative aspects of human genetics, including population studies, segregation analysis, linkage, mapping, and genetic risk determination. Corequisite or prerequisite: Pediatrics Genetics 200A.

200G Hereditary Cancer Counseling (4) W (odd years). Lecture, three hours. Issues in genetic counseling for cancer. Cancer biology; genetic mechanisms and environmental influences in carcinogenesis; tumor pathology; cancer gene mapping; epidemiology. Features natural history, diagnosis, prevention, surveillance, and management of heredity cancers. Psychosocial, ethical, legal aspects of cancer risk assessment. Prerequisites: Pediatrics Genetics 200A, 200B.

200H Genetic Counseling Research Design (4) S. Seminar, three hours. Quantitative and qualitative methods for genetic counseling research. Reference management; statistic: sample size, power, and data analysis; reliability and validity; surveys, questionnaires, interviews, and focus groups; quality of life and genetic epidemiology research; designing a research protocol; IRB issues; grant writing.

200L Cytogenetics Laboratory (4) F. Laboratory, 10 hours/week. A practicum introducing methods of specimen collection, short-term lymphocyte and bone marrow culture, long-term fibroblast and amniocyte culture, harvesting and slide preparation, chromosome staining, microphotography, and darkroom techniques. Microscopic chromosome analysis, photographic karyotyping, and the appropriate use of cytogenetic nomenclature are emphasized. Open only to Genetic Counseling students.

201A Introduction to Genetic Counseling (4) F. Through directed readings, observing patient evaluations, role-playing, and conducting intake interviews, students are introduced to the process of diagnosis, management, and counseling for genetic disease. Psychosocial issues, interviewing techniques, pedigree construction, clinical photography, and various other skills are addressed. Open only to Genetic Counseling students.

201B Clinical Rotation I (4) W. Tutorial and fieldwork. Provides extensive supervised experience in history taking, interviewing, and psychosocial assessment in the clinical genetics setting. Students independently perform telephone, office, and home-visit intake interviews, participate in counseling, and present cases at patient management conferences. Open only to Genetic Counseling students.

201C Clinical Rotation II (4) S. Tutorial and fieldwork. Provides further supervised experience in genetic counseling, case management, clinic administration and organization, and the use of community resources. Emphasis is on sharpening counseling skills and on developing a professional identity and code of ethics. Open only to Genetic Counseling students.

201D Prenatal Diagnosis Counseling (4) F. Tutorial and fieldwork. A practicum with extensive supervised experience in prenatal diagnosis counseling which provides the student with the opportunity to conduct genetic counseling sessions semi-independently and to further develop clinical skills. Open only to Genetic Counseling students. Prerequisites: Pediatrics Genetics 200A, 200B, and 200C.

202A Counseling in Human Genetics: Theory and Methods (3) S. Lecture and discussion, two hours. Theoretical approaches, counseling models and methods, and bio-psychosocial assessment strategies are examined in the context of genetic counseling. Contract-setting, working alliance, the use of self and evaluation methods. Beginning counseling and peer supervision skills are practiced in class. Open only to Genetic Counseling students.

202B Community Resources (2) F. Seminar and activity, two hours. Lectures, guest speakers, and community visits acquaint the genetic counselor with public and private health care and funding agencies, parent support and advocacy groups, and other resources available to assist individuals and families confronted with genetic disorders, developmental disabilities, and birth defects. Open only to Genetic Counseling students.

202C Ethical Issues in Human Genetics (2) S (odd years). Lecture and discussion, two hours. Explores major social, legal, and ethical issues in genetic counseling including those arising in genetic screening, prenatal diagnosis, informed consent, privacy and confidentiality, rights of the disabled, new genetic and reproductive technologies, treatment, and access to services. Prerequisite: consent of instructor.

203A Counseling in Human Genetics: Putting Thought to Practice (4) F. Seminar, three hours. Builds upon the skills learned in previous courses emphasizing advanced counseling methods such as listening, empathy, and collaboration. The counselor's own self-awareness, ethical behaviors, and limits are explored. Individual, team, and group exercises are performed. Prerequisite: Pediatrics Genetics 202A. Open only to Genetic Counseling students.

204A, B, C Professional Skills Development (4, 4, 4) F, W, S. Hones and augments existing competencies in genetic counseling through ongoing clinical experiences. Students develop skills in use of computers for genetics applications, provision of community and professional education, and clinic administration. Further experience in genetics laboratories or specialty clinics may be elected by students. Open only to Genetic Counseling students.

295 Master's Thesis Research and Writing (4 to 8) F, W, S. Tutorial. Under the supervision of one or more faculty members, the student designs and conducts a research project or completes a case report. A problem in the cytogenetics, biochemical, clinical, psychosocial, or behavioral areas of medical genetics may be investigated. Prerequisite: consent of instructor.

Microbiology and Molecular Genetics

Building B, Room 240, Medical Sciences I; (949) 824-5261
Rozanne M. Sandri-Goldin, **Department Chair**
Marian L. Waterman, **Department Vice Chair**

Faculty

Ruslan D. Aphasizhev: Molecular biology of trypanosomes; mitochondrial RNA editing
Alan G. Barbour: Molecular pathogenesis and immunology of vector-borne infections
Emiliana Borrelli: Dopaminergic system and glial cells in CNS development
K. George Chandy *(Joint)*: Role of potassium channels in lymphocyte function and disease
Michael Demetriou *(Joint)*: The molecular biology and glycobiology of T cell dysfunction in organ-specific autoimmunity

Alan L. Goldin: Molecular analysis of ion channel function and its roles in human diseases
Klemens J. Hertel: Regulation of gene expression by alternative splicing
Anthony A. James: Methods for controlling the transmission of vector-borne diseases, specifically malaria and dengue fever
Janos K. Lanyi *(Joint)*: Bacteriorhodopsin; halorhodopsin; light-driven ion pumps
Masayasu Nomura *(Joint)*: RNA Polymerase I; nucleolus; nuclear transport and function
Manuela Raffatellu: Mechanisms of *Salmonella* interaction with the intestinal mucosa; mucosal barrier function during *Salmonella* infection
W. Edward Robinson, Jr. *(Joint)*: Molecular pathogenesis of lentivirus infection and drug discovery against HIV
Suzanne B. Sandmeyer *(Joint)*: Molecular genetics of a position-specific yeast retrovirus-like element
Rozanne M. Sandri-Goldin: Structural and functional analysis of a multifunctional herpes virus regulatory protein
Paolo Sassone-Corsi *(Joint)*: Signal transduction, gene expression, oncogenesis, circadian clock
Bert L. Semler: Replication and translation of picornaviruses; RNA-protein and protein-protein interactions
Yongsheng Shi: Post-transcriptional gene regulation and its role in human diseases
Ming Tan: Bacterial pathogenesis; gene regulation in Chlamydia
Marian L. Waterman: Wnt signaling in cancer and lymphocytes

The Department of Microbiology and Molecular Genetics provides advanced training to individuals interested in the regulation of gene expression and the structural and functional properties of proteins encoded by these genes. The research in the Department covers a wide range of topics with special emphasis on bacterial gene expression and pathogenesis; viral gene expression and host interactions; trypanosome molecular biology; vector-borne malaria and dengue fever transmission; nuclear-cytoplasmic transport and intracellular signaling; eukaryotic gene expression; mRNA splicing, editing, and processing; cancer genetics and tumor suppressors; ion channel expression and function; genomics and bioinformatics.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Cellular and Molecular Biosciences (CMB) and the program in Mathematical and Computational Biology (MCB), which are described in a previous section. Students admitted into the CMB program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending an original proposal for specific dissertation research. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Course descriptions may be found in the School of Biological Sciences section.

Experimental Pathology

Building D, Room D440, Medical Sciences I; (949) 824-6574
Fritz Lin, **Interim Department Chair**

Experimental Pathology Faculty

Jefferson Y. Chan: Regulation of genes associated with oxidative stress
K. George Chandy: Molecular biology and structure of ion channels; novel therapeutic agents
Luis M. de la Maza: Chlamydia trachomatis vaccines and sexually transmitted diseases
Robert A. Edwards: Mucosal immunology, inflammatory bowel disease, G-proteins, prostaglandins, and chemokines
Mark Fisher: Mechanisms of stroke, vascular neurobiology, blood-brain barrier
Lisa Flanagan-Monuki: Regulation of neural stem cells
Taosheng Huang: Molecular basis of genetic diseases in humans
Anthony A. James: Malaria parasite development; genetic manipulation of insect vectors
John J. Krolewski: Signal transduction pathways regulating the growth and death of normal and neoplastic cells
J. Lawrence Marsh: Regulation of growth factor signaling in patterning, regeneration and oncogenesis
Dan Mercola: Translational cancer biology
Edwin S. Monuki: Cerebral cortex development and disease
Andre J. Ouellette: Mechanisms and regulation of innate immunity in mammalian epithelia
Ellena M. Peterson: Chlamydia vaccine development
W. Edward Robinson: Pathogenesis of retrovirus infections; molecular mechanisms of integration
Sandor Szabo: Pathogenesis of gastrointestinal ulceration, duodenal ulcer
Andrea J. Tenner: Innate immunity; the roles of complement and phagocytes in health and disease
Ping H. Wang: Molecular hormone actions in the normal and diseased heart

The Department of Pathology and Laboratory Medicine offers a Ph.D. in Biological Sciences with a concentration in Experimental Pathology. The graduate program emphasizes experimental approaches to better understand the molecular and cellular mechanisms of disease. Students work in laboratories studying topics ranging from infectious processes such as malaria and the acquired immune deficiency syndrome to innate immunity, including studies on granulocytes and antimicrobial peptides. The principal areas of research investigated by faculty in the Experimental Pathology concentration range from developmental neurobiology to cancer, including prostate cancer.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Cellular and Molecular Biosciences (CMB), which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the start of their second year.

Experimental pathology makes extensive use of both animal models of human disease and studies on human tissues from human subjects. Therefore, the curriculum is heavily weighted on experimental models, including animal models, of human disease. The didactic teaching components of the track are supplemented by a twice-monthly Pathology research conference, in which postdoctoral fellows and graduate students present "research in progress" seminars. This seminar series allows trainees the opportunity to gain invaluable experience in presenting their research to other scientists and provides a mentoring process through which students gain insights from diverse scientific viewpoints.

Students must advance to candidacy during their third year. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Course descriptions may be found in the School of Biological Sciences section.

Pharmacology and Toxicology

360 Medical Surge II; (949) 824-7651
Paolo Sassone-Corsi, **Department Chair**
Olivier Civelli, **Graduate Program Director/Advisor**

Graduate Program Faculty

James D. Belluzzi: Brain substrates and pharmacology of reward; characterization and development modulation of nicotine and cocaine reinforcement; abuse potential of tobacco smoke constituents
Emiliana Borrelli *(Joint)*: Dopamine signaling and drugs of addiction; mouse models of neurodegenerative diseases
Olivier Civelli: Molecular biology of G protein-coupled receptors; search for novel neurotransmitters and neuropeptides; pharmacological and behavioral characterizations of the novel neurotransmitters and neuropeptides

Sue Piper Duckles: Pharmacology and physiology of vascular smooth muscle; regulation of cerebral circulation, impact of gender and gonadal steroids on vascular function

Frederick J. Ehlert: Muscarinic receptor coupling mechanisms; functional role of muscarinic receptor subtypes; pharmacological methods of analysis; analysis of drug receptor interactions

Pietro R. Galassetti *(Joint)*: Physiological and altered adaptive responses to stress in healthy and dysmetabolic children and adults; non-invasive monitoring of metabolic variables through analysis of exhaled gases

Kelvin W. Gee: Pharmacology of allosteric modulators of the $GABA_A$ receptor, selective modulation of $GABA_A$ receptor subtypes; novel molecular targets for neuropharmacological agents and drug discovery

Naoto Hoshi: Physiological role and regulation of the M-channel, molecular biology, electrophysiology and live cell FRET imaging

Mahtab Jafari *(Joint)*: Anti-aging effects of botanicals and pharmaceutical compounds; the impact of botanical extracts on mitochondrial bioenergetics, oxidative stress, and other pathways of aging using cell culture and *Drosophila*

Diana N. Krause: Cerebrovascular regulation and pharmacology; vascular effects of gonadal hormones; melatonin receptors

Frances M. Leslie: Addiction, drugs of abuse and brain development

Z. David Luo *(Joint)*: Molecular mechanisms of pain and transduction; study gene regulation and signaling pathways in chronic pain processing using animal models, and molecular biology techniques

Daniele Piomelli: Biochemistry and pharmacology of the endogenous cannabinoid and other lipid derived messengers

Rainer K. Reinscheid *(Joint)*: Neuropharmacology of peptide transmitters involved in stress, sleep and memory using cellular and transgenic animal models

Paolo Sassone-Corsi: Signal transduction and gene expression; chromatin remodeling and epigenetics; germ cell differentiation; circadian clock and rhythms

Graduate program joint faculty are from Microbiology and Molecular Genetics, Pediatrics, Pharmaceutical Sciences, and Anesthesiology.

The Department of Pharmacology offers the Ph.D degree in Pharmacology and Toxicology. The Department is engaged in a broad scope of research activity. The Ph.D. program prepares students for careers in academia, research institutions, and the pharmaceutical industry by providing a foundation in all aspects of pharmacology, from molecular mechanisms through behavior. Faculty research interests include molecular and cellular pharmacology, neurosciences, gene regulation, circadian rhythms, epigenetic modifications, neuropharmacology, psychopharmacology, and cardiovascular pharmacology. Emphasis is placed on providing an integrated understanding of drug receptors: their structure, location, and function; molecular aspects of drug action; receptor signaling mechanisms; structure–activity relationships and drug design; and the role of receptors and drugs in development and aging, plasticity, reinforcement and drug abuse, neural disorders, and cardiovascular physiology and disease.

Prerequisites for admission include a background in the physical and biological sciences which includes courses in mathematics, physics, chemistry, and biochemistry, including laboratory experience. The Graduate Record Examination (GRE) and Subject Test in Biology or Chemistry are highly recommended.

The graduate core program includes Pharmacology 241A-B, 252, 254, 255, 256, 257, Biochemistry 210A, and Physiology 206A-B, quarterly participation in Pharmacology 298–299, and any additional elective courses assigned by faculty advisors. (Ph.D. students may receive the M.S. degree after completion of appropriate requirements.) The major additional requirement for the Ph.D. is the satisfactory completion and oral defense of a dissertation based on original research carried out under the guidance of a faculty member. All candidates for the Ph.D. degree are required to engage in research activities throughout the course of their academic programs. This requirement applies to all students whether or not they are compensated for such services. An appointment as a graduate student researcher is awarded on the basis of scholarship and not as compensation for services rendered. Before advancing to candidacy each student must pass a written qualifying examination to determine the student's competence in pharmacology or pharmacology and toxicology. The full-time student is expected to pass the written qualifying examination by the eighth quarter and the oral qualifying examination for the Ph.D. by the eleventh quarter. The normative time for advancement to candidacy is three years. All requirements for the Ph.D. degree should be completed within five years, and the maximum time permitted is seven years. For more information, contact the Graduate Program Director/Advisor, Department of Pharmacology.

Graduate Gateway Program in Medicinal Chemistry and Pharmacology (MCP). The one-year graduate MCP Gateway Program is designed to function in concert with selected department programs, including the Ph.D. in Pharmacology and Toxicology. Upon successful completion of the MCP curriculum at the end of their first year, students choose a faculty advisor who is affiliated with one of the participating departments, and transition into their "home" department to complete the remaining degree requirements. They will receive their Ph.D. degree from the department of their chosen advisor. Detailed information is available in the Department of Pharmacology section and at http://www.pharmacology.uci.edu.

The Department also participates in the **Interdepartmental Neuroscience Gateway Program,** described in the School of Biological Sciences section of the *Catalogue.* Students who select a focus in Neuroscience and a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year and will receive their Ph.D. from the department of their chosen advisor. Detailed information is available at http://www.inp.uci.edu/research/facsort_dept_list.cfm?department=15.

GRADUATE COURSES IN PHARMACOLOGY AND TOXICOLOGY

***(Schedule of Classes* designation: Pharm)**

210 Chemical Neuroanatomy (4). Lecture, two hours; seminar, two hours. Organization of the nervous system, especially with respect to chemical identity of elements, for students of pharmacology. Major cell types, methods of study, ultrastructure, synaptic organization of functionally defined systems, localization of chemically defined cells and receptors, and brain development.

241A-B Medical Pharmacology and Therapeutics (6-6) F, W. Lecture and seminar, eight hours. Principles of pharmacology and in-depth study of drug action. Pharmacokinetics and pharmacodynamics: absorption, distribution and metabolism, general principles of action and receptor concepts. Discussion of major drug classes: molecular mechanism of action, physiological consequences of administration, and clinical use. Prerequisites: Physiology and Biophysics 206A-B and Molecular Biology and Biochemistry 210A.

252 Neurotransmitter and Drug Receptors (6) W. Lecture, three hours; seminar, three hours. Ligand gated ion channels, G protein linked receptors, receptor tyrosine kinases, ligand regulated transcription factors, their signaling mechanisms, trafficking and physiological responses. Analysis of receptor properties by pharmacological methods, radioligand binding, and molecular biology.

254 Methods in Pharmacology (4) F. Lecture, four hours; laboratory, eight hours. Receptor analysis: bioassay measuring contraction, calcium mobilization, second messenger responses; operant conditioning: whole animal, single neuron; radioligand binding; quantitative autoradiography; immunocytochemistry; in situ hybridization for analysis of mRNA; Western and Northern analysis; transgenic mouse knock in and knock out techniques. Prerequisite: consent of instructor.

255 Chemical Transmission (4) S. Lecture, two hours; seminar, two hours. Mechanisms underlying chemical signaling processes in the brain and periphery. Molecular biology, signal transduction, transmitter synthesis and inactivation, pharmacology of integrative function and behavior. Prerequisite: consent of instructor.

256 Experimental Design for Pharmacologists (1) F, W, S. Lecture, one hour; discussion, one hour; laboratory, one hour. Population and sample statistics, hypothesis testing, analysis of variance, nonparametric statistics, experimental design, power, and the use of statistical computer software. Prerequisite: Pharmacology 252 or consent of instructor.

257 Ethics in Research (1) F, W, S. Lecture, one hour; discussion, one hour. Ethical conduct in research including data handling, authorship, conflict of interest, animal rights, handling of misconduct. Prerequisite: Pharmacology 299 or consent of instructor. May be taken for credit two times.

298 Seminar (2) F, W, S. Presentation and discussion of current problems and methods in teaching and research in pharmacology, toxicology, and therapeutics.

299 Research (1 to 12) F, W, S

Physiology and Biophysics

Building D, Room D340, Medical Sciences I; (949) 824-5863
Michael D. Cahalan, **Department Chair**

Faculty

Kenneth M. Baldwin: Developmental, hormonal, and exercise factors regulating striated muscle gene expression
Ralph A. Bradshaw *(Emeritus)*: Structure and function of polypeptide growth factors and their receptors; mechanisms of protein turnover
Michael D. Cahalan: Ion channels and Ca^{2+} signaling in the immune system
Vincent J. Caiozzo: Cellular and molecular mechanisms regulating the mechanical properties of skeletal muscle
K. George Chandy: Molecular biology of ion channels and their role in immune cells
John Jay Gargus: Molecular analysis of membrane signaling proteins
Alan L. Goldin: Molecular biology of neural channels and receptors
Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes
James E. Hall: Biophysics of membrane channels, gap junctions and water channels
Todd C. Holmes: Ion channels, cellular physiology, neural circuits and behavior; circadian and visual circuits
Lan Huang: Developing and employing mass spectrometry-based proteomic approaches for study of signal transduction networks, identification of protein complexes and characterization of their post-translational modifications
Frances A. Jurnak: Macromolecular crystallography; biochemical and structural studies of a model G protein; EF-Tu; structure/function of plant virulence factors
Janos K. Lanyi: Transport, structure, and energy coupling in bacteriorhodopsin and halorhodopsin
John A. Longhurst: Integrative biology and sensory signaling systems important in cardiovascular regulation; central neural regulation of autonomic outflow inactivation of cardiac afferents and the influence of electroacupuncture
Kenneth J. Longmuir: Intracellular metabolism, sorting, and transport of lipid in mammalian cells; membrane fusion
Hartmut Luecke: Protein crystallography; structure and function of membrane-associated proteins
Jogeshwar Mukherjee: Non-invasive imaging for precise assessment of islet cell mass in human diabetes
Ian Parker: Intracellular calcium and cell signaling
Thomas L. Poulos: Protein crystallography; protein engineering; heme enzyme structure and function
Hamid M. Said: Cellular and molecular mechanisms and regulation of intestinal and renal vitamin transporters
Ivan Soltesz: Plasticity and modulation of inhibitory synaptic neurotransmission
Francesco Tombola: Electrical and chemical sensing in excitable cells, VSD-containing ion channels and enzymes
Bruce J. Tromberg: Optical spectroscopy of tissues and cells
Nosratola D. Vaziri: Vascular biology and role of nitric oxide and reactive oxygen species in regulation of blood pressure; molecular basis of lipid disorders
Larry E. Vickery: Molecular chaperones and protein folding; protein engineering
Ping H. Wang: Molecular actions of insulin-like growth factor I (IGF) in cardiac muscle; complications of diabetes
Stephen H. White: Protein folding in membranes; peptide-bilayer interactions; membrane structure
Albert Zlotnik: Chemokines, cancer metastasis, gene array analysis of human diseases and bioinformatics in immunology

The Department of Physiology and Biophysics offers research opportunities in the molecular biophysics of membranes and proteins, ion channels and signal transduction, endocrinology, molecular and cell biology, developmental neurobiology, and exercise physiology.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the graduate program in Cellular and Molecular Biosciences (CMB), which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their second year.

The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students participate in a literature review course designed to strengthen research techniques and presentation skills, and attend the weekly Department colloquium. Students advance to candidacy during the third year; each student presents a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee examines the student's qualifications for the successful conduct of doctoral dissertation research. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination. Interdisciplinary dissertation research involving more than one faculty member is encouraged. The normative time for completion of the Ph.D. is five years, and the maximum time permitted is seven years.

Course descriptions may be found in the School of Biological Sciences section.

APPENDIX

University Administration

Under the State constitution, governance of the University is entrusted to The Board of Regents. The Regents appoint the President of the University, and with the President's advice, the officers of the University. Authority in academic matters is delegated by The Regents to the Academic Senate, which consists of faculty and certain administrative officers. The Academic Senate determines academic policy for the University as a whole, sets conditions for admission and the granting of degrees, authorizes and supervises courses and curricula, and advises the University administration on faculty appointments, promotions, and budgets. Additionally, each campus has a divisional Academic Senate.

The President is executive head of the total institution. Each campus has a Chancellor as its chief administrative officer. Students participate in policy-making at both the campus and Universitywide levels.

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

Regents Ex Officio

Governor of California and President of The Regents: Arnold Schwarzenegger
Lieutenant Governor of California: *to be announced*
Speaker of the Assembly: John Pérez
State Superintendent of Public Instruction: Jack O'Connell
President of the Alumni Associations of the University of California: Rex Hime
Vice President of the Alumni Associations of the University of California: Darek DeFreece
President of the University: Mark G. Yudof

Appointed Regents[1]

Richard C. Blum (2014)
William C. De La Peña (2018)
Russell S. Gould (2017)
Eddie Island (2017)
Odessa P. Johnson (2012)
George Kieffer (2021)
Sherry L. Lansing (2022)
Monica C. Lozano (2013)
Hadi Makarechian (2020)
George M. Marcus (2012)
Norman J. Pattiz (2014)
Bonnie Reiss (2020)
Frederick Ruiz (2016)
Leslie Tang Schilling (2013)
Bruce D. Varner (2018)
Paul Wachter (2016)
Charlene Zettel (2021)
Jesse Cheng (July 1, 2010–June 30, 2011)

Regents-Designate[2]

Bruce Hallett
to be announced

[1] Regents, except ex-officio Regents and the student Regent, are appointed by the Governor to 12-year terms commencing on March 1. Ex-officio Regents serve by virtue of their elected or appointed positions; the student Regent is appointed by the Regents to a one-year term commencing on July 1.

[2] One-year terms expiring June 30.

Faculty Representatives to The Regents

Harry Powell
Dan Simmons

Staff Advisors to The Regents

Juliann Martinez
to be announced

Principal Officers of The Regents

General Counsel and Vice President–Legal Affairs: Charles F. Robinson
Treasurer (Acting) of The Regents and Chief Investment Officer and Vice President–Investments: Marie N. Berggren
Secretary and Chief of Staff of The Regents: Diane M. Griffiths
Senior Vice President–Chief Compliance and Audit Officer: Sheryl Vacca

OFFICE OF THE PRESIDENT

President of the University: Mark G. Yudof
Executive Vice President: Bruce B. Darling
Executive Vice President–Business Operations: Nathan Brostrom
Provost and Executive Vice President–Academic Affairs: Lawrence Pitts
Executive Vice President–Chief Financial Officer: Peter J. Taylor
Senior Vice President–Health Sciences and Services: John D. Stobo
Senior Vice President–External Relations: Daniel M. Dooley

Refer to http://www.ucop.edu/busops/orgchart.html for a complete list of administrators.

CHANCELLORS

Chancellor at Berkeley: Robert J. Birgeneau
Chancellor at Davis: Linda Katehi
Chancellor at Irvine: Michael V. Drake
Chancellor at Los Angeles: Gene D. Block
Chancellor at Merced: Sung-Mo (Steve) Kang
Chancellor at Riverside: Timothy P. White
Chancellor at San Diego: Marye Anne Fox
Chancellor at San Francisco: Susan Desmond-Hellmann
Chancellor at Santa Barbara: Henry T. Y. Yang
Chancellor at Santa Cruz: George R. Blumenthal

UCI OFFICERS

Chancellor: Michael V. Drake
Executive Vice Chancellor and Provost: Michael R. Gottfredson
Vice Chancellor, Administrative and Business Services: Wendell C. Brase
Vice Chancellor, Planning and Budget: Meredith Michaels
Vice Chancellor, Research: *vacant*
Vice Chancellor, Student Affairs: Manuel N. Gómez
Vice Chancellor, University Advancement: *vacant*
Chief Executive Officer, Medical Center and Associate Vice Chancellor, Medical Center Affairs: Terry A. Belmont

UCI DEANS AND CHAIRS OF INDEPENDENT ACADEMIC UNITS

Dean, Claire Trevor School of the Arts: Joseph S. Lewis III
Dean, School of Biological Sciences: Albert F. Bennett
Dean, The Paul Merage School of Business: Andrew J. Policano
Dean, The Henry Samueli School of Engineering: Rafael L. Bras
Dean, School of Humanities: Vicki L. Ruiz
Dean, Donald Bren School of Information and Computer Sciences: Hal S. Stern
Dean, School of Law: Erwin Chemerinsky
Dean, School of Physical Sciences: John C. Hemminger
Interim Dean, School of Social Ecology: Valerie Jenness
Dean, School of Social Sciences: Barbara A. Dosher
Dean, School of Medicine: Ralph V. Clayman
Dean, Continuing Education: Gary W. Matkin
Dean, Graduate Division: Frances M. Leslie
Dean, Division of Undergraduate Education: Sharon V. Salinger
Chair, Department of Education: Deborah Lowe Vandell

UCI ADMINISTRATORS

Associate Chancellor: Ramona Agrela
Assistant Vice Chancellor, Communications Office: Susan Menning
Director, Intercollegiate Athletics: Michael Izzi
Vice Provost, Academic Personnel: Herbert P. Killackey
Assistant Vice Chancellor, Academic Personnel: Patricia L. Price
Vice Provost, Academic Planning: Michael P. Clark
Associate Executive Vice Chancellor: Michael R. Arias

Assistant Executive Vice Chancellor, Director of the Office of Equal Opportunity and Diversity, and Title IX/ Sexual Harassment Officer: Kirsten Quanbeck
Assistant Vice Chancellor, Office of Information Technology: Dana F. Roode
University Librarian: *vacant*
University Ombudsman: J. Michael Chennault
Chief Executive Officer, Medical Center and Associate Vice Chancellor, Medical Center Affairs: Terry A. Belmont
Assistant Vice Chancellor, Quality Measurement/Outcomes: Sherrie Kaplan
Associate Vice Chancellor, Administrative and Business Services: Paige L. Macias
Associate Vice Chancellor and Campus Architect: Rebekah Gladson
Assistant Vice Chancellor, Administrative Computing Services: Mark S. Askren
Assistant Vice Chancellor/Controller: Richard A. Andrews
Interim Assistant Vice Chancellor, Facilities Management and Environmental Health: Marc Gomez
Interim Assistant Vice Chancellor, Human Resources: Paige Macias
Associate Vice Chancellor, Budget: Richard Lynch
Associate Dean, Graduate Division: Susan Bibler Coutin
Associate Vice Chancellor, Administration: Mark W. Warner
Associate Vice Chancellor, Research: Randall Holcombe
Assistant Vice Chancellor, Research Development: Jacob Levin
Assistant Vice Chancellor, Administrative Operations and Planning: Sinqui Musto
Assistant Vice Chancellor, Research Administration: Bruce Morgan
Assistant Vice Chancellor, Technology Alliances: Ronnie Hanecak
Associate Vice Chancellor, Student Affairs: Daniel J. Dooros
Assistant Vice Chancellor, Counseling and Health Services: Thomas A. Parham
Assistant Vice Chancellor, Enrollment Services: Brent Yunek
Assistant Vice Chancellor and Dean of Students: Rameen Talesh
Interim Assistant Vice Chancellor, Campus Development: Christopher Johnston
Assistant Vice Chancellor, Alumni Relations, and Executive Director, UCI Alumni Association: Jorge Ancona
Assistant Vice Chancellor, Community and Government Relations: Elizabeth A. Toorney
Assistant Vice Chancellor, Marketing: Mark Aydelotte
Assistant Vice Chancellor, Resource Planning and Administration of University Advancement: Lynn Rahn

Refer to http://www.nacs.uci.edu/telephone/principal.html for a complete list of UCI administrators.

University Professors

One of the highest honors that can be bestowed on UC faculty, the title "University Professor" is reserved for scholars of international distinction who are recognized and respected as teachers of exceptional ability. The purpose of the University Professorship is to recognize the special talents of outstanding scholars and teachers.

Francisco J. Ayala, UCI
J. Michael Bishop, UCSF
E. Margaret Burbidge, *Emerita,* UCSD
Shu Chien, UCSD
Alexandre J. Chorin, UCB
Marvin L. Cohen, UCB
Michael Cole, UCSD
Robert B. Edgerton, UCLA
Sandra M. Faber, UCSC
Arturo Gómez-Pompa, *Emeritus,* UCR
M. Frederick Hawthorne, *Emeritus,* UCLA
Richard M. Karp, UCB
Yuan T. Lee, *Emeritus,* UCB
Roger Reynolds, UCSD
Robert Rosenthal, UCR
Frank H. Shu, UCSD
S. Jonathan Singer, *Emeritus,* UCSD
Neil J. Smelser, *Emeritus,* UCB
Gabor A. Somorjai, UCB
Charles H. Townes, *Emeritus,* UCB
Ming T. Tsuang, UCSD
John R. Whinnery, *Emeritus,* UCB
Hayden V. White, *Emeritus,* UCSC

UCI Faculty Distinctions

The **2007 Nobel Peace Prize** was awarded to the Intergovernmental Panel on Climate Change (IPCC) and former Vice President Al Gore. Several UC Irvine climate scientists have played a part in writing, reviewing, and editing IPCC climate change reports over the last decade, including Michael Prather, *Professor of Earth System Science and Fred Kavli Chair in Earth System Science;* Donald R. Blake, *Professor of Chemistry and Earth System Science;* Michael L. Goulden, *Associate Professor of Earth System Science and of Ecology and Evolutionary Biology;* Gudrun Magnusdottir, *Professor of Earth System Science;* James T. Randerson, *Associate Professor of Earth System Science;* Soroosh Sorooshian, *Director of the Center for Hydrometeorology and Remote Sensing (CHRS), and UCI Distinguished Professor of Civil and Environmental Engineering and of Earth System Science;* Susan E. Trumbore, *Professor of Earth System Science;* Stanley C. Tyler, *Researcher, Department of Earth System Science;* Jin-Yi Yu, *Associate Professor of Earth System Science;* and Charles S. Zender, *Associate Professor of Earth System Science.*

UCI NOBEL LAUREATES

Nobel Prize in Chemistry, 2004
Irwin Rose, *UCI Distinguished Professor Emeritus, Department of Physiology and Biophysics*

Nobel Prize in Chemistry, 1995
F. Sherwood Rowland, *Research Professor Emeritus of Chemistry and Earth System Science, and Bren Chair*

Nobel Prize in Physics, 1995
Frederick Reines, *UCI Distinguished Professor Emeritus of Physics* (d. 1998)

TEMPLETON PRIZE, 2010

Francisco J. Ayala, *University Professor and Donald Bren Professor of Biological Sciences*

UCI ENDOWED CHAIRS

Daniel G. Aldrich, Jr. Endowed Chair
Frank L. Meyskens, Jr., *Director of the Chao Family Comprehensive Cancer Center and Professor, Departments of Medicine (Hematology/Oncology), Biological Chemistry, and Program in Public Health*

Louise Turner Arnold Chair in the Neurosciences
Daniele Piomelli, *Professor, Departments of Pharmacology and Biological Chemistry*

Howard Baskerville Professor in the History of Iran and the Persianate World
Touraj Daryaee, *Associate Director of the Dr. Samuel M. Jordan Center for Persian Studies and Culture and Associate Professor of History*

Arnold and Mabel Beckman Chair in Laser Biomedicine
Michael W. Berns, *Professor of Surgery, Developmental and Cell Biology, and Biomedical Engineering*

Grace Beekhuis Bell Chair in Biological Chemistry
Masayasu Nomura, *Professor of Biological Chemistry and of Microbiology and Molecular Genetics*

Donald Bren Professors, The Donald L. Bren Endowment
Francisco J. Ayala, *University Professor of Biological Sciences*
Thomas J. Carew, *Department Chair and Professor of Neurobiology and Behavior*
Michael Carey, *Professor of Computer Science*
Paolo Casali, *Director of the Center for Immunology and Professor, Departments of Molecular Biology and Biochemistry and of Medicine*
Michael T. Clegg, *Professor of Biological Sciences and of Ecology and Evolutionary Biology*
Sheldon Greenfield, *Executive Co-Director of the Center for Health Policy Research and Professor of Medicine (General Internal Medicine)*
Wilson Ho, *Professor of Physics and Chemistry*
Ramesh C. Jain, *Professor of Information and Computer Sciences*
Wen-Hwa Lee, *Professor of Biomedicine, Biological Chemistry, and Pharmacology*
Gary Olson, *Professor of Informatics*
Judy Olson, *Professor of Informatics*
F. Sherwood Rowland, *Research Professor Emeritus of Chemistry and Earth System Science*
Douglas C. Wallace, *Director of the Organized Research Unit in Molecular and Mitochondrial Medicine and Genetics (MAMMAG) and Professor of Molecular Medicine, Biological Chemistry, and Ecology and Evolutionary Biology*

Conexant-Broadcom Endowed Chair in the Center for Pervasive Communications and Computing
Ender Ayanoglu, *Director of the Center for Pervasive Communications and Computing and Professor of Electrical Engineering and Computer Science*

Edward A. Dickson Emerti Professors
Robert Folkenflik, *Professor Emeritus of English*
Ellen Greenberger, *Professor Emerita of Psychology and Social Behavior*

Endowed Chair and Director of the Center for Diversity in Engineering Education
Maria Q. Feng, *Professor of Civil and Environmental Engineering and of Electrical Engineering and Computer Science*

Lawrence K. Dodge Endowed Chair in Integrative Biology
John Longhurst, *Associate Dean, School of Medicine; Director of the Susan Samueli Center for Integrative Medicine; and Professor of Medicine (Cardiology), Physiology and Biophysics, Pharmacology, and Biomedical Engineering*

Edwards Lifesciences Chair
Steven C. George, *Director of the Edwards Lifesciences Center for Advanced Cardiovascular Technology and Professor of Biomedical Engineering and of Chemical Engineering and Materials Science*

Walter B. Gerken Chair in Enterprise and Society
Richard B. McKenzie, *Professor of Management and Economics*

Robert Gumbiner Chair in Health Care Management
Paul J. Feldstein, *Director of the Center for Health Care Management and Policy and Professor of Management, Planning, Policy, and Design, and Economics*

Hasso Brothers Endowed Chair in Radiological Sciences
Scott C. Goodwin, *Professor of Clinical Radiological Sciences*

Roger W. and Janice M. Johnson Chair in Civic Governance and Public Management
Martha Feldman, *Professor of Planning, Policy, and Design, Management, Political Science, and Sociology*

Fred Kavli Chair in Earth System Science
Michael Prather, *Director of the UCI Environment Institute and Professor of Earth System Science*

Kirkup Chair in Psychiatry and Human Behavior for the Medical Treatment of Stuttering
Gerald Maguire, *Associate Dean, School of Medicine, Director of Residency Training, and Associate Professor of Clinical Psychiatry and Human Behavior*

Irving H. Leopold Chair in Ophthalmology
Roger F. Steinert, *Department Chair of Ophthalmology and Professor of Clinical Ophthalmology and Biomedical Engineering*

Dorothy J. Marsh Chair in Reproductive Biology
Philip J. DiSaia, *Director of the Division of Gynecologic Oncology and Professor of Obstetrics and Gynecology (Gynecologic Oncology) and of Radiation Oncology*

Della Martin Chair in Psychiatry
William E. Bunney, Jr., *UCI Distinguished Professor of Psychiatry and Human Behavior*

Maseeh Chair in Persian Studies and Culture
Nasrin Rahimieh, *Director of the Dr. Samuel M. Jordan Center for Persian Studies and Culture and Professor of Comparative Literature*

Maseeh Professor in Persian Performing Arts
Hossein Omoumi, *Professor of Music and of Persian Performing Arts*

Gary McCue Administrative Term Chair in Cosmology
James Bullock, *Associate Professor of Physics*

Abraham I. Melden Chair in Moral Philosophy
Margaret Gilbert, *Professor of Philosophy*

Merage Chair in Business Growth
David A. Hirshleifer, *Professor of Management and Economics*

Eric L. and Lila D. Nelson Chair in Neuropharmacology
Olivier Civelli, *Professor, Departments of Pharmacology, Developmental and Cell Biology, and Pharmaceutical Sciences*

Nichols Clinical Neuroscience Chair
Claudia Kawas, *Professor of Neurology and of Neurobiology and Behavior*

Jack W. Peltason Endowed Chair
Bernard N. Grofman, *Director of the Center for the Study of Democracy and Professor of Political Science and Economics*

The Edward J. Quilligan Chair in Maternal-Fetal Medicine
Manuel Porto, *Department Chair of Obstetrics and Gynecology and Professor of Clinical Obstetrics and Gynecology (Maternal-Fetal Medicine)*

The Robert and Marjorie Rawlins Chair in Music
David Brodbeck, *Department Chair and Professor of Music*

Ronald W. Reagan Endowed Chair in Geriatrics
Laura Mosqueda, *Director of the Program in Geriatrics and Professor of Clinical Family Medicine (Family Medicine and Geriatrics)*

Reeve-Irvine Chair in Spinal Cord Injury Research
Oswald Steward, *Professor, Departments of Anatomy and Neurobiology, Neurobiology and Behavior, and Neurosurgery*

Henry Samueli Endowed Chairs
G. Scott Samuelsen, *Director of the National Fuel Cell Research Center, Director of the Advanced Power and Energy Program, and Professor of Mechanical and Aerospace Engineering*
William A. Sirignano, *Professor of Mechanical and Aerospace Engineering*
H. Kumar Wickramasinghe, *Professor of Electrical Engineering and Computer Science, Biomedical Engineering, and Chemical Engineering and Materials Science*

The Henry Samueli Endowed Chair in Engineering in the Center for Engineering Science in Design
J. Michael McCarthy, *Director of the Center for Engineering Science in Design (CESD) and Professor of Mechanical and Aerospace Engineering*

The Henry Samueli "Turing" Chair in Computer Systems Design
Daniel D. Gajski, *Director of the Center for Embedded Computer Systems and Professor of Electrical Engineering and Computer Science and of Computer Science*

Susan Samueli Chair in Integrative Medicine
John Longhurst, *Associate Dean, School of Medicine; Director of the Susan Samueli Center for Integrative Medicine; and Professor of Medicine (Cardiology), Physiology and Biophysics, Pharmacology, and Biomedical Engineering*

Danette (Dee Dee) Shepard Chair in Neurological Studies
Tallie Z. Baram, *Professor, Departments of Pediatrics, Neurology, and Anatomy and Neurobiology*

Gerald B. Sinykin, M.D. Endowed Chair in Family Medicine
Kathryn M. Larsen, *Department Chair and Health Sciences Clinical Professor, Department of Family Medicine*

Jack H. Skirball Endowed Chair
James V. Jester, *Professor in Residence, Departments of Ophthalmology and Biomedical Engineering*

Ted and Janice Smith Family Foundation Endowed Chair in Information and Computer Science
Hal S. Stern, *Dean of the Donald Bren School of Information and Computer Sciences and Professor of Statistics*

Robert R. Sprague Chair in Brain Imaging
Steven G. Potkin, *Director of the Brain Imaging Center and Professor of Psychiatry and Human Behavior*

Taco Bell Chair in Information Technology Management
Vijay Gurbaxani, *Director of the Center for Research on Information Technology and Organizations and Professor of Management*

Edward and Vivian Thorp Chair in Mathematics
Karl C. Rubin, *Professor of Mathematics*

Thomas T. and Elizabeth C. Tierney Chair in Global Peace and Conflict Studies
Patrick Morgan, *Professor of Political Science*

Claire Trevor Dean's Endowed Chair, Claire Trevor School of the Arts
Joseph S. Lewis III, *Dean of the Claire Trevor School of the Arts and Professor of Studio Art*

Claire Trevor Professor in the Arts
Robert Cohen, *Professor of Drama*

UC Presidential Chair
Peter M. Rentzepis, *Professor of Chemistry and of Electrical Engineering and Computer Science*

Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation
Scott A. Bollens, *Professor of Planning, Policy, and Design*

UCI CHANCELLOR'S FELLOWS

Christine M. Beckman, *Associate Professor of Management*
Gilberto Q. Conchas, *Associate Professor of Education*
Asantha Cooray, *Associate Professor of Physics*
Thomas E. Lane, *Professor of Molecular Biology and Biochemistry*
Julia Reinhard Lupton, *Professor of English, Comparative Literature, and Education*

UCI CHANCELLOR'S PROFESSORS

Kei Akagi, *UCI Chancellor's Professor of Music*
Pierre Baldi, *Director of the Institute for Genomics and Bioinformatics and UCI Chancellor's Professor of Computer Science, Biomedical Engineering, Developmental and Cell Biology, and Biological Chemistry*
Frank D. Bean, *UCI Chancellor's Professor of Sociology and Economics*
Dan L. Burk, *UCI Chancellor's Professor of Law*
Kitty C. Calavita, *UCI Chancellor's Professor of Criminology, Law and Society and of Sociology*
Imran S. Currim, *UCI Chancellor's Professor of Management*
Nikil Dutt, *UCI Chancellor's Professor of Computer Science and of Electrical Engineering and Computer Science*
Catherine Fisk, *UCI Chancellor's Professor of Law*
Michael T. Goodrich, *Associate Dean for Faculty Development for the Donald Bren School of Information and Computer Sciences and UCI Chancellor's Professor of Computer Science*
Hamid Jafarkhani, *Director of Networked Systems and UCI Chancellor's Professor of Electrical Engineering and Computer Science*
Philippe Jorion, *UCI Chancellor's Professor of Management and Economics*
Frank LaFerla, *Director of the Institute for Memory Impairments and Neurological Disorders and UCI Chancellor's Professor of Neurobiology and Behavior*
Eva Y.-H. P. Lee, *UCI Chancellor's Professor of Developmental and Cell Biology and of Biological Chemistry*
Peter Li, *UCI Chancellor's Professor of Mathematics*
John S. Lowengrub, *UCI Chancellor's Professor of Mathematics, Chemical Engineering and Materials Science, and Biomedical Engineering*
Marc J. Madou, *UCI Chancellor's Professor of Mechanical and Aerospace Engineering, Biomedical Engineering, and Chemical Engineering and Materials Science*
Steven Mailloux, *UCI Chancellor's Professor of Rhetoric and English*
George E. Marcus, *UCI Chancellor's Professor of Anthropology*
Shaul Mukamel, *UCI Chancellor's Professor of Chemistry*
Margot Norris, *UCI Chancellor's Professor of English and Comparative Literature*
Kenneth L. Pomeranz, *UCI Chancellor's Professor of History*
Thomas L. Poulos, *UCI Chancellor's Professor of Molecular Biology and Biochemistry, Pharmaceutical Sciences, Physiology and Biophysics, and Chemistry*
R. Anthony Reese, *UCI Chancellor's Professor of Law*
Gabriele Schwab, *UCI Chancellor's Professor of Comparative Literature and English*
David A. Snow, *UCI Chancellor's Professor of Sociology*
Etel Solingen, *UCI Chancellor's Professor of Political Science*
Daniel Stokols, *UCI Chancellor's Professor of Planning, Policy, and Design; Psychology and Social Behavior; Public Health; and Environmental Health, Science, and Policy*
Richard Taylor, *Director of the Institute for Software Research and UCI Chancellor's Professor of Informatics*
Brook Thomas, *UCI Chancellor's Professor of English*
Christopher Tomlins, *UCI Chancellor's Professor of Law*
Chen S. Tsai, *UCI Chancellor's Professor of Electrical Engineering and Computer Science*

UCI DISTINGUISHED PROFESSORS

Satya N. Atluri, *UCI Distinguished Professor of Mechanical and Aerospace Engineering*
John C. Avise, *UCI Distinguished Professor of Ecology and Evolutionary Biology*
Rafael L. Bras, *Dean of The Henry Samueli School of Engineering and UCI Distinguished Professor of Civil and Environmental Engineering and of Earth System Science*
William E. Bunney, Jr., *UCI Distinguished Professor of Psychiatry and Human Behavior and of Pharmacology, and Della Martin Chair in Psychiatry*
Erwin Chemerinsky, *Dean of the School of Law and UCI Distinguished Professor of Law and Political Science*
Greg Duncan, *UCI Distinguished Professor of Education, Economics, and Psychology and Social Behavior*
David Easton, *UCI Distinguished Research Professor of Political Science*
Barbara J. Finlayson-Pitts, *UCI Distinguished Professor of Chemistry*
Zachary Fisk, *UCI Distinguished Professor of Physics*
Anthony A. James, *UCI Distinguished Professor of Microbiology and Molecular Genetics and of Molecular Biology and Biochemistry*
Daniel D. Joseph, *UCI Distinguished Adjunct Professor of Mechanical and Aerospace Engineering*
Elizabeth F. Loftus, *UCI Distinguished Professor of Psychology and Social Behavior; Criminology, Law and Society; Cognitive Sciences; and Law*
R. Duncan Luce, *UCI Distinguished Professor Emeritus of Cognitive Sciences and Economics*
Penelope Maddy, *UCI Distinguished Professor of Logic and Philosophy of Science and of Mathematics*
David B. Malament, *UCI Distinguished Professor of Logic and Philosophy of Science*
Ricardo Mileđi, *UCI Distinguished Professor of Neurobiology and Behavior*
Jack Miles, *UCI Distinguished Professor of English*
J. Hillis Miller, *UCI Distinguished Research Professor of English and Comparative Literature*
Ngugi wa Thiong'o, *UCI Distinguished Professor of English and Comparative Literature*
Larry E. Overman, *UCI Distinguished Professor of Chemistry*
Yvonne Rainer, *UCI Distinguished Professor of Studio Art*
Irwin Rose, *UCI Distinguished Professor Emeritus, Department of Physiology and Biophysics*
Donald G. Saari, *Director of the Institute for Mathematical Behavioral Sciences and UCI Distinguished Professor of Economics and Mathematics*
Henry Samueli, *UCI Distinguished Adjunct Professor of Electrical Engineering and Computer Science*
Paolo Sassone-Corsi, *Department Chair of Pharmacology and UCI Distinguished Professor of Pharmacology, Microbiology and Molecular Genetics, and Pharmaceutical Sciences*
Masanobu Shinozuka, *UCI Distinguished Professor of Civil and Environmental Engineering*
Brian Skyrms, *UCI Distinguished Professor of Logic and Philosophy of Science and of Economics, and Director of the Minor in the History and Philosophy of Science*
Soroosh Sorooshian, *UCI Distinguished Professor of Civil and Environmental Engineering and of Earth System Science*
George Sperling, *UCI Distinguished Professor of Cognitive Sciences and of Neurobiology and Behavior*
Eric J. Stanbridge, *UCI Distinguished Professor Emeritus of Microbiology and Molecular Genetics*

UCI FACULTY MEMBERSHIP IN MAJOR U.S. LEARNED SOCIETIES

American Academy of Arts and Sciences: 36
American Association for the Advancement of Science: 127
American Philosophical Society: 7
American Physical Society: 45
National Academy of Engineering: 12
National Academy of Sciences: 24
National Academy of Sciences–Institute of Medicine: 6

Principles of Community

UCI is a multicultural community of people from diverse backgrounds. Our activities, programs, classes, workshops, lectures, and everyday interactions are enriched by our acceptance of one another, and we strive to learn from each other in an atmosphere of positive engagement and mutual respect.

Our legacy for an increasingly multicultural academic community and for a learning climate free from expressions of bigotry is drawn from the United States and California Constitutions, and from the charter of the University of California which protects diversity and reaffirms our commitment to the protection of lawful free speech. Affirmation of that freedom is an effective way of ensuring that acts of bigotry and abusive behavior will not go unchallenged within the University. Tolerance, civility, and mutual respect for diversity of background, gender, ethnicity, race, and religion are as crucial within our campus community as are tolerance, civility, and mutual respect for diversity of political beliefs, sexual orientation, and physical abilities. Education and clear, rational, and vigorous challenges are positive responses to prejudice and acts of bigotry.

The University's nondiscrimination policy, in compliance with applicable federal and state law, covers treatment in University programs and activities as well as admission and employment. UCI expects all those affiliated with it to adhere to the letter and the spirit of University nondiscrimination policies and related federal and state laws. Information concerning these policies is available on the World Wide Web at http://www.ucop.edu/.

Allegations of physical abuse, threats of violence, or conduct that threatens the health or safety of any person on University property or in connection with official University functions will be investigated promptly and, where found to exist, appropriate actions will be taken in accordance with University policy.

All who work, live, study, and teach at UCI are here by choice and, as part of that choice, should be committed to these Principles of Community which are an integral part of the guidelines by which the University community can successfully conduct its affairs.

Student Conduct and Discipline

Students enrolling in the University are expected to assume an obligation to conduct themselves in a manner compatible with the University's function as an educational institution. A handbook is available which sets forth standards of conduct expected of UCI students. *University of California Policies Applying to Campus Activities, Organizations, and Students* lists rules concerning conduct and related matters, as established by the policies of the Regents and the President of the University and also incorporates campus regulations. These policies are available at http://www.dos.uci.edu/conduct/uci_policy.php.

Academic Honesty

The UCI Academic Senate Policies on Academic Honesty were approved by the Irvine Division on June 2, 1988, and most recently revised on June 5, 2008.

A. PREAMBLE

The University is an institution of learning, research, and scholarship predicated on the existence of an environment of honesty and integrity. As members of the academic community, faculty, students, and administrative officials share responsibility for maintaining this environment. It is essential that all members of the academic community subscribe to the ideal of academic honesty and integrity and accept individual responsibility for their work. Academic dishonesty is unacceptable and will not be tolerated at the University of California, Irvine. Cheating, forgery, dishonest conduct, plagiarism, and collusion in dishonest activities erode the University's educational, research, and social roles. They devalue the learning experience and its legitimacy not only for the perpetrators but for the entire community.

B. RESPONSIBILITIES

All members of the academic community have a responsibility to ensure that scholastic honesty is maintained.

Faculty have primary responsibility for:

1. Upholding and enforcing universitywide principles of academic honesty and integrity and explaining clearly these principles including any qualifications which may be operative in the classes they are teaching.
2. Minimizing opportunities for academic misconduct in their courses.
3. Confronting students suspected of academic dishonesty in a way that respects student privacy.
4. Affording students accused of academic misconduct the right to appeal any resulting disputes to disinterested parties for hearing and resolution.
5. Assigning an appropriate grade to a student who engages in academic dishonesty.
6. Reporting all instances of academic dishonesty to appropriate Associate Deans.
7. Protecting the anonymity of any student reporting an incident of academic dishonesty to the extent permitted by due process required for the accused and other legal requirements.

Students have responsibility for:

1. Refraining from cheating and plagiarism.
2. Refusing to aid or abet any form of academic dishonesty.
3. Notifying professors and/or appropriate administrative officials about observed incidents of academic misconduct. The anonymity of a student reporting an incident of academic dishonesty will be protected.

C. WHAT IS ACADEMIC DISHONESTY?

Academic dishonesty applies equally to electronic media and print, and involves text, images, and ideas. It includes but is not limited to the following examples:

Cheating

1. Copying from others during an examination.
2. Communicating exam answers with other students during an examination.
3. Offering another person's work as one's own.
4. Taking an examination for another student or having someone take an examination for oneself.
5. Sharing answers for a take-home examination or assignment unless specifically authorized by the instructor.
6. Tampering with an examination after it has been corrected, then returning it for more credit.
7. Using unauthorized materials, prepared answers, written notes or information concealed in a blue book or elsewhere during an examination.
8. Allowing others to do the research and writing of an assigned paper (including use of the services of a commercial term-paper company).

Dishonest Conduct

1. Stealing or attempting to steal an examination or answer key from the instructor.
2. Changing or attempting to change academic records without proper sanction.
3. Submitting substantial portions of the same work for credit in more than one course without consulting all instructors involved.
4. Forging add/drop/change cards and other enrollment documents, or altering such documents after signatures have been obtained.
5. Intentionally disrupting the educational process in any manner.
6. Allowing another student to copy off of one's own work during a test.

Plagiarism

Plagiarism is intellectual theft. It means use of the intellectual creations of another without proper attribution. Plagiarism may take two main forms, which are clearly related:

1. To steal or pass off as one's own the ideas or words, images, or other creative works of another.
2. To use a creative production without crediting the source, even if only minimal information is available to identify it for citation.

Credit must be given for every direct quotation, for paraphrasing or summarizing a work (in whole, or in part, in one's own words), and for information which is not common knowledge.

Collusion

Any student who knowingly or intentionally helps another student perform any of the above acts of cheating or plagiarism is subject to discipline for academic dishonesty.

D. PROCEDURES FOR DEALING WITH INCIDENTS OF ACADEMIC DISHONESTY

Many, perhaps most, incidents of academic dishonesty involve accusations which are based on clear evidence and which are not contested by the accused student. In such cases, if the infraction is relatively minor and there is no indication that the accused student has previously been involved in such incidents, it is most appropriate that the matter be resolved between the student and the faculty member. When this occurs, it is nevertheless important that a written report of the incident be filed to ensure that penalties assessed are commensurate with the offense and that repeated infractions be detected and dealt with appropriately.

More serious incidents and repeat offenses which call for stronger disciplinary action, may result in campuswide sanctions, in addition to the actions imposed by a faculty member. In such cases, these sanctions, as described in Section 105.00 of the *Policies Applying to Campus Activities, Organizations, and Students,* will be administered by the Academic Associate Deans or the Office of the Dean of the Division of Undergraduate Education or the Graduate Division.

Finally, whenever an accusation of academic dishonesty or a grade given by a faculty member is contested by an accused student, the student has recourse for mediation of the dispute. Processes for mediation, assistance with conflict resolution, and/or an informal inquiry may be requested by the student or the Associate (Undergraduate or Graduate) Dean of the faculty member's school through the Office of the Ombudsman. In incidents where a campuswide sanction has been imposed, the student can request a hearing with the appropriate Hearing Panel on Academic Honesty which will be convened by the Office of either the Dean of the Division of Undergraduate Education or the Dean of the Graduate Division, depending on the status of the accused student.

The procedures outlined here are designed to institute a system that recognizes that many cases of academic misconduct are best resolved between the student and faculty member involved, while it provides for appropriate record keeping and handling of serious and repeated offenses and guarantees a fair hearing to a student who has received a campuswide sanction.

Authority of Faculty Members

When a faculty member has evidence of student academic dishonesty, the faculty member must present the evidence to the student in a private meeting or communicate with the student by some other means. The faculty member must initiate this communication with the student within 15 calendar days of discovering evidence of academic dishonesty and evaluating the relevant work. The faculty member then may follow up with one or more of only the following actions:

1. To issue a reprimand to the student with letter of explanation to the student's file.
2. To require repetition of the questionable work or examination with letter of explanation to the student's file.
3. To reduce the grade to an 'F' or zero, if appropriate, on the questionable work or examination with written notification to the student and a letter of explanation to the student's file.
4. To assign the student a failing grade in the course or otherwise lower the grade in the course with a letter of explanation to the student's file.

It is essential that any such action be reported in writing to the student in a letter from the faculty member. Copies of this letter must also be sent to (a) the Associate Dean of the faculty member's school, (b) the Associate Dean of the student's school, who will maintain a file of cases of academic misconduct involving students enrolled in that school, and (c) the Office of the Dean of the Division of Undergraduate Education or Dean of the Graduate Division, as appropriate. The faculty member is strongly encouraged to consult with the Associate (Undergraduate or Graduate) Dean of his or her school before the letter is drafted. Reference to (or a copy of) the UCI Academic Senate Policies on Academic Honesty should be included in the letter. If action (4) is taken, the faculty member is responsible for making certain that the failure is recorded by the Registrar on the student's permanent academic record. Careful documentation of the incident must be maintained by the faculty member in the event that his or her actions in the case should later be subject to review.

Responsibilities of the Academic Associate Deans

1. The Associate (Graduate or Undergraduate) Dean of either the accused student's school or of the faculty member's school may impose campuswide sanctions. Sanctions imposed by Associate Deans are final unless the student requests a hearing within 15 calendar days of notification. The 15-day period starts from the time the Associate Dean has notified the student of the discipline or has notified the student of the hearing and appeal process by providing a copy of this policy, whichever comes later. It is recommended that each case be brought to a final resolution within 90 days of instruction.
2. The Associate Dean (or equivalent official) of each school is responsible for maintaining confidential records concerning academic dishonesty of students enrolled in that school. All letters reporting faculty-imposed academic penalties for academic misconduct will be included in these files.
3. The Associate Dean of the accused student's school will be responsible for identifying all incidents which represent repeated offenses by a student and may impose a campuswide sanction because of repeat offenses.
4. Associate Deans are required to notify the student of the hearing and appeal process and provide the student a copy of this policy or explicitly refer the student to it. If an Associate Dean suspects grounds for a grievance involving discrimination, the student should be referred to Appendix II of *The Manual of the Irvine Division of the Academic Senate,* "Student Academic Grievance Procedures Relating to Non-Discrimination" (which is limited to allegations of discrimination).
5. In those classes where academic dishonesty continues to be a problem and the faculty member or another university official has already been approached by the student(s) from the class, the Associate Dean will consult with the appropriate faculty member to address the problem.
6. Students who have on file recorded acts of academic dishonesty, as defined by the *Policies Applying to Campus Activities, Organizations, and Students,* may be excluded by the Associate Deans from consideration for academic honors at graduation. Another consequence could be that in admission to a major, for students who wish to change majors, individual majors may take into account the commission of an act of dishonesty. Exclusion from consideration for honors and exclusion from major change is not for the purposes of this policy to be considered a campuswide sanction. Students excluded from such consideration under this policy therefore are not eligible to request a formal hearing.
7. In those situations where a campuswide sanction is imposed and the student requests a hearing, the Associate Dean will forward to the Hearing Panel on Academic Honesty the materials which led him or her to impose the sanction. In addition, the Associate Dean will appear before the Hearing Panel to discuss the case upon request of the Hearing Panel.

Student Hearings

It should be understood that all grades are ultimately the responsibility of faculty. However, if a student accused of academic dishonesty wishes to contest an action by a faculty member, the student may, within a 15-day period, request assistance by writing to the Associate Dean of the faculty member. The period is 15 calendar days and starts from the time the Associate Dean has notified the student of the discipline or has notified the student of the hearing and appeal process by providing a copy of this policy, whichever comes later.

When a campuswide sanction is imposed, the affected student may, within 15 days of notification, request a hearing before a Hearing Panel on Academic Honesty. Students considering a hearing in response to campuswide sanctions for alleged academic misconduct are urged to contact the Associate Dean of their academic school and/or the University Ombudsman concerning possible sources of advice and assistance. Students should be advised regarding the grounds for appeal as specified in section 103.11 of the *Policies Applying to Campus Activities, Organizations, and Students.*

Role of the Ombudsman

The services of the Ombudsman may be requested at any time by the student, the faculty member, or the Associate Dean. The role of the Ombudsman is to assist in conflict resolution, mediate the dispute, perform an informal inquiry of the case, and clarify policies and procedures for anyone involved.

In those incidents where imposition of a campuswide sanction is a consideration and the student has requested a hearing before the Panel on Academic Honesty, the case may be referred to the Office of the Ombudsman by the Dean of the Division of Undergraduate Education or the Dean of the Graduate Division. An informal inquiry may be conducted by the Ombudsman who will then confer with the Associate Dean and the accused student. However, the findings of the Ombudsman will not be forwarded to the Hearing Panel on Academic Honesty. The case may be referred by the student to either the

Dean of the Division of Undergraduate Education or the Dean of the Graduate Division, as appropriate, who will be responsible for convening the Hearing Panel on Academic Honesty.

Students should always be informed by the Associate Dean of their school of their right to secure the assistance of the Ombudsman in understanding and addressing the problem or issue.

Role of the Deans of Undergraduate Education and the Graduate Division

Whenever an incident of academic misconduct is referred to the Office of the Dean of the Division of Undergraduate Education or the Dean of the Graduate Division by the student, a representative of the appropriate offices will meet with the student and, if requested, explain the process and arrange the time and place of a hearing before the appropriate (Undergraduate or Graduate) Hearing Panel on Academic Honesty. The appropriate Dean will maintain a record of all cases of academic dishonesty reported by the respective Associate Deans.

Formal resolution by the appropriate Hearing Panel on Academic Honesty may result in the imposition by the Dean of the Division of Undergraduate Education or the Dean of the Graduate Division of one or more of the sanctions described in section 105.00 of the *Policies Applying to Campus Activities, Organizations, and Students*, including suspension or dismissal from the University.

E. HEARING PANELS ON ACADEMIC HONESTY

1. Jurisdiction of the Hearing Panels on Academic Honesty

There will be two types of Hearing Panels on Academic Honesty. One type of Hearing Panel will hear cases of campuswide sanctions on undergraduate students while the other will hear graduate student cases. The Hearing Panels can reduce, affirm, or increase sanctions.

2. Composition of the Hearing Panels on Academic Honesty

An undergraduate Hearing Panel on Academic Honesty will be convened for each case submitted throughout the year. The pool from which each Undergraduate Hearing Panel on Academic Honesty shall be drawn consists of all appointed faculty and ex officio faculty on the Council of Student Experience, selected student Peer Academic Advisors nominated by the academic units (one per unit), and a representative from the Office of the Dean of the Division of Undergraduate Education, appointed by the Dean of the Division of Undergraduate Education. These groups will be trained in the Academic Honesty policy and procedures by a representative of the Dean of the Division of Undergraduate Education so that there will be a ready pool of qualified participants available on short notice when a hearing is called. For each hearing involving an Undergraduate Hearing Panel on Academic Honesty, two faculty appointed by the Council on Student Experience Chair, two student Peer Academic Advisors and one representative from the Office of the Dean of the Division of Undergraduate Education appointed by the Dean of the Division of Undergraduate Education shall form an Undergraduate Hearing Panel on Academic Honesty to hear the student appeal. The hearing will be scheduled by the Office of the Dean of the Division of Undergraduate Education.

The Graduate Hearing Panel on Academic Honesty will be a standing administrative committee composed of two faculty, two students, and a representative of the Dean of the Graduate Division. Terms of faculty members will be two years. One faculty member will be appointed annually by the Dean of the Graduate Division. To ensure continuity, terms will be staggered; during the first year of operation only, one faculty member will be appointed for a one-year term. One additional faculty member will be appointed by the Dean of the Graduate Division to serve as an alternate to the Graduate Hearing Panel. The two students shall serve for one year and will be appointed by AGS. One additional student member will be appointed by AGS to serve as an alternate.

3. Role of the Associate Dean

The Associate Dean will forward to each Hearing Panel the evidence which led to his or her decision to impose the campuswide sanction. In addition, the Associate Dean will appear before the Hearing Panel to comment on the case if the Hearing Panel wishes.

4. Hearings

a. If the student requests a hearing, the Office of the Dean of the Division of Undergraduate Education or the Dean of the Graduate Division shall schedule a hearing of the case before the appropriate Hearing Panel. Written notice must be given to the parties involved regarding the date, time, and place of the hearing.
b. The chair will be elected by the membership of the Hearing Panel. The chair will rule on all questions of procedure, the admission or exclusion of evidence, and the need to call witnesses for additional testimony. Hearings shall be held in accordance with generally accepted standards of procedural due process.
c. Hearings will be closed unless the parties involved agree to an open hearing. Every effort must be made by all parties to maintain confidentiality during the process.
d. Hearings shall be held following the provisions in sections 103.11. (5, 6, and 8) of the Policy on Student Conduct and Discipline in the *Policies Applying to Campus Activities, Organizations, and Students*, except that the role of the Dean of Students shall be filled by the Dean of the Division of Undergraduate Education or the Graduate Division, depending on the status of the student.

5. Report of the Hearing Panel on Academic Honesty

After a hearing, a Hearing Panel shall arrive at a decision. When a decision is reached, the student and the appropriate Academic Associate Dean will be informed of the judgment.

6. Final Appeal

If the campuswide sanction is upheld by a Hearing Panel, the report of the Hearing Panel and all supporting evidence may be sent for a final level of review at the request of the student. If the accused student is an undergraduate, the case will be reviewed by the Dean of the Graduate Division. If the accused student is a graduate student, the case will be reviewed by the Dean of the Division of Undergraduate Education. This final review process can only result in decreasing the sanctions imposed on the student or leaving them unchanged. There are no further appeals or processes.

7. Implementation

Once the judgment has been rendered the Dean of the Division of Undergraduate Education or the Graduate Division will implement the judgment in the form of a letter to the student as well as initiate any other necessary administrative actions.

F. MAINTENANCE OF DISCIPLINARY RECORDS

Records relating to academic dishonesty will be maintained by the Associate Deans and the Offices of the Deans of the Division of Undergraduate Education and the Graduate Division to promote consistency of penalties for a given offense and to ensure appropriate action against repeat offenders. Records will normally be destroyed after five years, unless the Associate Dean determines in any particular case that there is good reason to extend the period of retention. In order to ensure that minor and nonrecurring infractions do not negatively impact a student's career beyond UCI, any student may petition to the Associate Dean of his or her academic school to have relevant academic disciplinary records expunged after the record is two years old or upon graduation, whichever comes first. The Associate Dean has sole authority to consider and to grant or deny such petitions. The University will release a student's disciplinary records to potential employers, governmental agencies, other educational institutions, or other organizations or individuals only if authorized to do so by the student in question or if compelled by law. Any record expunged by the Associate Dean will also be erased in the Dean of the Division of Undergraduate Education or the Graduate Division Offices.

ADDITIONAL INFORMATION

This policy is intended to focus solely on issues related to academic dishonesty. Certain details of the implementation of procedures specified here can be found in the UCI publication *Policies Applying to Campus Activities, Organizations, and Students*, available free of charge from the Office of the Ombudsman, located in University Tower, Suite 650-A; the Office of the Dean of Students, located in the UCI Student Center; and on the World Wide Web at http://www.dos.uci.edu/conduct/uci_policy.php.

Anti-Hazing Compliance

The State of California and the University of California have expressly and repeatedly asserted their opposition to hazing and preinitiation activities which do not contribute to the positive development and welfare of the individuals involved.

In February 2006, the Education Code of the State of California was repealed and amended to codify within the Penal Code a new definition of hazing. In

accordance with the revised Education Code and Penal Code, students are advised of the following:

Education Code 32052

Any person who participates in the hazing of another, or any corporation or association which knowingly permits hazing to be conducted by its members or by others subject to its direction or control, shall forfeit any entitlement to State funds, scholarships, or awards which are enjoyed by him, by her, or by it, and shall be deprived of any sanction or approval granted by any public educational institution or agency.

Penal Code 245.6

Section 245.6 of the Penal Code reads:

(a) It shall be unlawful to engage in hazing, as defined in this section.

(b) "Hazing" means any method of initiation or preinitiation into a student organization or student body, whether or not the organization or body is officially recognized by an educational institution, which is likely to cause serious bodily injury to any former, current, or prospective student of any school, community college, college, university, or other educational institution in this state. The term "hazing" does not include customary athletic events or school-sanctioned events.

(c) A violation of this section that does not result in serious bodily injury is a misdemeanor, punishable by a fine of not less than one hundred dollars ($100), nor more than five thousand dollars ($5,000), or imprisonment in the county jail for not more than one year, or both.

(d) Any person who personally engages in hazing that results in death or serious bodily injury as defined in paragraph (4) of subdivision (f) of Section 243 of the Penal Code, is guilty of either a misdemeanor or a felony, and shall be punished by imprisonment in county jail not exceeding one year, or by imprisonment in the state prison.

(e) The person against whom the hazing is directed may commence a civil action for injury or damages. The action may be brought against any participants in the hazing, or any organization to which the student is seeking membership whose agents, directors, trustees, managers, or officers authorized, requested, commanded, participated in, or ratified the hazing.

(f) Prosecution under this section shall not prohibit prosecution under any other provision of law.

Campus Safety and Security

The UCI Police Department (UCIPD) is responsible for the safety and security of the UCI campus as well as properties owned, controlled, or occupied by the University. UCIPD and UCI administration make continual efforts to reduce crime on campus and at the Medical Center. The following information is excerpted from the *Crime Awareness Bulletin*, which is published annually in September and distributed to new and continuing students, as well as to faculty and staff, at both the campus and the Medical Center.

CRIME PREVENTION

The UCI Police Department's Crime Prevention Unit offers ongoing educational programs and presentations to the campus community. With the assistance of the Community Service Officers and Patrol Division, the Crime Prevention Unit teaches prevention and awareness about drugs and alcohol, domestic violence, sexual assault, identity theft, property and auto theft, workplace violence, and personal safety including the RAD (Rape Aggression Defense) Program for women and radKIDS (Resisting Aggression Defensively) for children. For more information or to schedule a presentation, call (949) 824-7181 or visit http://www.police.uci.edu. Monthly crime prevention tips are also available on the Web site.

SAFETY TIPS

Day and night, no matter where you go, you should be aware of your surroundings, should exercise good common sense, and should use safety precautions as you would elsewhere. Theft is the most common security problem. Property theft is preventable if you keep your personal belongings (backpack, laptop computer, cellular phone) in sight, within arm's length, or secured in a locked place. Students living on campus should keep their doors locked at all times. Faculty and staff should keep valuables locked up while they are in their workplace. The last person to leave a laboratory or building should lock the doors. Report the presence of unknown visitors or suspicious persons to the UCI Police Department or UCI Medical Center Security as soon as possible.

Use the UCI Safety Escort Service (949-824-SAFE) if you are out at night, don't walk alone—walk in pairs, and learn the location of the Emergency Call Boxes (Blue Light Phones).

EMERGENCY CALL BOXES (BLUE LIGHT PHONES)

Both the campus and the Medical Center have emergency call boxes (Blue Light Phones). Use them to report emergencies, crimes, suspicious persons or activities, accidents, safety hazards, and to call for a Safety Escort.

The campus has 125 Blue Light Phones scattered around the ring mall and in parking structures and lots. (See the campus map for locations.) The blue light on the box easily identifies them, and the boxes detect all sounds within a 15-foot radius. To use the phone, just push the button located on the front of the call box. You are then automatically connected to the UCI Police Department. The Medical Center has 21 emergency call boxes located throughout the complex and in the southeast corner of the Manchester parking lot. These phones are connected to the UCIPD dispatcher.

SUBSTANCE ABUSE POLICIES

UCI is designated a drug-free environment, and only under certain conditions is the consumption of alcohol permitted. The sale, manufacture, distribution, or possession of any controlled substance is illegal under both state and federal laws. Such laws are strictly enforced by UCIPD. All members of the UCI community–students, faculty, and staff–who violate these laws are subject to disciplinary action, criminal prosecution, fines, and imprisonment.

Sales, consumption, and the furnishing of alcohol on the UCI campus are restricted by UCI's Alcohol Policy and California State law and are controlled by the California Department of Alcohol and Beverage Control (ABC). However, ABC and UCIPD share enforcement of alcohol laws on campus. It is unlawful to sell, furnish, or give alcohol to a person under the age of 21 years (this includes the Anthill Pub & Grille). The possession of alcohol by anyone under 21 in a public place, or in a place open to the public, is illegal. It is also a violation of UCI's Alcohol Policy for anyone under the age of 21 to consume or possess alcohol in any public or private housing area on campus. Students and employees found violating alcohol/substance policies or laws could be subject to sanctions by the University.

WEAPONS POLICY

It is a serious violation of the law to possess a firearm on University property. Section 626.9 of the California Penal Code makes it a felony to bring or to possess a firearm on the grounds, or within buildings (including private residences) of the University of California, without the written permission of the Chancellor or the Chancellor's designee.

Please report to the UCI Police Department anyone who has stated that they have a gun on campus or who has made a threat to use a firearm on campus. You can ask to be anonymous when reporting.

TO REPORT AN INCIDENT

UCIPD needs your help to build and maintain a safe community. If you become suspicious about unknown visitors or someone's actions appearing unusual for the time and place, call UCIPD. They will assess the situation and take the appropriate action. Please report crimes; you can ask to be anonymous.

On campus, dial 9-1-1 or (949) 824-5222 for a police, medical, or fire emergency. For non-emergency police services dial (949) 824-5223. The UCI Police Department's campus office is open 24 hours a day and is located on the ground floor of the Public Services Building, at the corner of East Peltason and Pereira Drives.

At the Medical Center, dial 9-1-1 or (714) 456-5222 for a police emergency, (714) 456-6123 for a fire or medical situation. The Medical Center Security office is located in Building 2 adjacent to the Emergency Department's ambulance ramp.

Crimes occurring off campus should be reported immediately to the city/state law enforcement agency where the crime occurred.

UCI CRIME STATISTICS

Pursuant to the Federal Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act of 1999, the University of California, Irvine annually makes available to all students, faculty, and staff statistics on the reported occurrences of criminal activity on and off campus and at the UCI Medical Center.

The University of California, Irvine's annual security report includes statistics for the previous three years concerning reported crime that occurred on campus, in certain off-campus buildings owned and controlled by UCI, at the UCI Medical Center, and on public property within or immediately adjacent to and accessible from the campus and Medical Center. The report also includes institutional policies concerning alcohol and drug use, crime prevention, the reporting of crimes, sexual assault, and other matters. To obtain a copy of this report go to the UCI Police Department Web site at http://www.police.uci.edu/ or visit the Department in person.

UCI Police Department
150 Public Services Building
Irvine, CA 92697-4900
(949) 824-5223
Crime Prevention Unit: (949) 824-7181

Computer- and Network-Use Policy

The University of California, Irvine (UCI) provides computing resources and worldwide network access to members of the UCI electronic community for legitimate academic and administrative pursuits to communicate, access knowledge, and retrieve and disseminate information. All members of the UCI community (faculty, staff, students, and authorized guests) sharing these resources also share the rights and responsibilities for their use.

Rights and Responsibilities

Worldwide, open-access electronic communication is a privilege and continued access requires that users act responsibly. Users should be able to trust that the products of their intellectual efforts will be safe from violation, destruction, theft, or other abuse. Users sharing computing resources must respect and value the rights and privacy of others, respect the integrity of the systems and related physical resources, and observe all relevant laws, regulations, and contractual obligations. Users are responsible for refraining from acts that waste resources, prevent others from using them, harm resources or information, or abuse other people. To help protect files, users are responsible for setting passwords appropriately and for keeping passwords confidential by not giving them to another person.

Most UCI-owned computers are under the control of a system administrator or lab manager. These administrators are expected to respect the privacy of computer system users. However, UCI computer system administrators may access user files or suspend services on the systems they manage without notice as required to protect the integrity of computer systems or to examine accounts that are suspected of unauthorized use, misuse, or have been corrupted or damaged. This includes temporarily locking vulnerable accounts, removing hung jobs, reprioritizing resource intensive jobs, and such.

Many UCI departments have their own computing and networking resources and policies. When accessing computing resources, users are responsible for obeying both the policies described here and the policies of other departments. Student responsibilities are also described in the *University of California Policies Applying to Campus Activities, Organizations, and Students.* In addition, all users are responsible for obeying policies of off-campus network services accessed using UCI resources.

Examples of Misuse

Examples of misuse include, but are not limited to:

- Knowingly running or installing on any computer system or network, or giving to another user, a program intended solely for the purpose of damaging or placing excessive load on a computer system or network. This includes, but is not limited to, computer viruses, Trojan horses, worms, bots, flash programs, or password cracking programs.
- Attempting to circumvent data protection schemes or uncover security loopholes without prior written consent of the system administrator. This includes creating and/or running programs that are designed to identify security loopholes and/or intentionally decrypt secure data.
- Using computers or electronic mail to act abusively toward others or to provoke a violent reaction, such as stalking, acts of bigotry, threats of violence, or other hostile or intimidating "fighting words." Such words include those terms widely recognized to victimize or stigmatize individuals on the basis of race, ethnicity, religion, sex, sexual orientation, disability, and other protected characteristics.
- Posting on electronic bulletin boards or Web pages materials that violate the University's codes of conduct (faculty, student). This includes posting information that is slanderous or defamatory in nature or displaying graphically disturbing or sexually harassing images or text in a public computer facility or location that are in view of other individuals.
- Attempting to monitor or tamper with another user's electronic communications or reading, copying, changing, or deleting another user's files or software without the explicit agreement of the owner.
- Violating terms of applicable software licensing agreements or copyright laws.
- Using campus networks to gain, or attempt to gain, unauthorized access to any computer system.
- Using a computer account or obtaining a password without appropriate authorization.
- Facilitating or allowing use of a computer account and/or password by an unauthorized person.
- Employing, either directly or by implication, a false identity when using an account or other electronic resources. This includes sending unauthorized mail that appears to come from someone else.
- Performing an act without authorization that will interfere with the normal operation of computers, terminals, peripherals, networks, or will interfere with others' ability to make use of the resources.
- Using an account for any activity that is commercial in nature not related to work at UCI, such as consulting services, typing services, developing software for sale, advertising products, and/or other commercial enterprises for personal financial gain.
- Deliberately wasting computing resources, such as playing games (for example, MUDS or IRC) while someone else is waiting to use the computer for UCI-related work, sending chain letters, spamming, treating printers like copy machines, storing or moving large files that could compromise system integrity or preclude other users' right of access to disk storage, and the like.

Consequences of Misuse

Misuse of computing, networking, or information is unacceptable, and users will be held accountable for their conduct. Serious infractions can result in temporary or permanent loss of computing and/or network privileges and/or Federal or State legal prosecution. Appropriate corrective action or discipline may be taken in conformance with applicable personnel policies, student policies, collective bargaining agreements, and procedures established by the Academic Senate. California Penal Code, Section 502 makes certain computer abuses a crime, (such as illegal reproduction of software protected by U. S. copyright law) and penalties can include a fine and/or imprisonment. Files may be subject to search under proper authorization.

Minor infractions of this policy, such as poorly chosen passwords, overloading systems, excessive disk space consumption, are typically handled internally to the department in an informal manner. More serious infractions such as abusive behavior, account invasion or destruction, attempting to circumvent system security, and the like are handled formally through the Office of the Dean of Students or by other appropriate officials.

Contact Information

For additional information, contact the Office of Information Technology (242 Multipurpose Science and Technology Building) by calling (949) 824-2222, or by sending e-mail to oit@uci.edu.

Subject Abbreviations

The following abbreviations are used in the *Schedule of Classes* and on student transcripts to indicate course designations.

Prefix	Long Name
AFAM	African American Studies
ANATOMY	Anatomy and Neurobiology
ANTHRO	Anthropology
ARABIC	Arabic
ART HIS	Art History
ARTS	Arts Interdisciplinary
ARTSHUM	Arts and Humanities
ART STU	Art Studio
ASIANAM	Asian American Studies
BIO SCI	Biological Sciences
BIOCHEM	Biological Chemistry
BME	Biomedical Engineering
CAMPREC	Campus Recreation

CBEMS	Chemical and Biochemical Engineering and Materials Science
CHC/LAT	Chicano/Latino Studies
CHEM	Chemistry
CHINESE	Chinese
CLASSIC	Classics
CLT&THY	Culture and Theory
COM LIT	Comparative Literature
COMPSCI	Computer Science
CRITISM	Criticism
CRM/LAW	Criminology, Law and Society
CSE	Computer Science and Engineering
DANCE	Dance
DEV BIO	Developmental and Cell Biology
DRAMA	Drama
E ASIAN	East Asian Languages and Literatures
EARTHSS	Earth System Science
ECO EVO	Ecology and Evolutionary Biology
ECON	Economics
EDU ABR	Education Abroad
EDUC	Education
EECS	Electrical Engineering and Computer Science
ENGLISH	English
ENGR	Engineering
ENGRCEE	Engineering, Civil and Environmental
ENGRMAE	Engineering, Mechanical and Aerospace
ENGRMSE	Engineering, Materials Science
ENVIRON	Environmental Analysis and Design/Environmental Health, Science and Policy
EPIDEM	Epidemiology
EURO ST	European Studies
FLM&MDA	Film and Media Studies
FRENCH	French
GERMAN	German
GLBLCLT	Global Cultures
GREEK	Greek
HEBREW	Hebrew
HINDI	Hindi
HISTORY	History
HUMAN	Humanities
HUMARTS	Humanities and Arts
I&C SCI	Information and Computer Science
INTL ST	International Studies
IN4MATX	Informatics
ITALIAN	Italian
JAPANSE	Japanese
KOREAN	Korean
LATIN	Latin
LINGUIS	Linguistics
LIT JRN	Literary Journalism
LPS	Logic and Philosophy of Science
M&MG	Microbiology and Molecular Genetics
MATH	Mathematics
MGMT	Management
MGMT EP	Management EMBA – Executive M.B.A.
MGMT FE	Management FEMBA – Fully Employed M.B.A.
MGMT HC	Management HEMBA – Health Care M.B.A.
MGMTMBA	Management M.B.A.
MGMTPHD	Management Ph.D.
MOL BIO	Molecular Biology and Biochemistry
MUSIC	Music
NET SYS	Networked Systems
NEURBIO	Neurobiology and Behavior
NUR SCI	Nursing Science
PATH	Pathology and Laboratory Medicine
PED GEN	Pediatrics Genetics
PERSIAN	Persian
PHARM	Medical Pharmacology
PHILOS	Philosophy
PHRMSCI	Pharmaceutical Sciences
PHY SCI	Physical Science
PHYSICS	Physics
PHYSIO	Physiology and Biophysics
POL SCI	Political Science
PORTUG	Portuguese
PP&D	Planning, Policy, and Design
PSY BEH	Psychology and Social Behavior
PSYCH	Psychology
PUBHLTH	Public Health
RAD SCI	Radiological Sciences
REL STD	Religious Studies
RUSSIAN	Russian
SOC SCI	Social Science
SOCECOL	Social Ecology
SOCIOL	Sociology
SPANISH	Spanish
STATS	Statistics
TAGALOG	Tagalog
TOX	Toxicology
UNEX	University Extension
UNI AFF	University Affairs
UNI STU	University Studies
URBPLAN	Urban and Regional Planning
VIETMSE	Vietnamese
VIS STD	Visual Studies
WOMN ST	Women's Studies
WRITING	Writing

Inactive Degree Programs

Although UCI is authorized to grant the following degrees, admission to these programs is not available: Applied Ecology, B.S.; Arts Interdisciplinary, B.A.; Business Administration, M.B.P.A.; Comparative Culture, B.A.; Educational Administration (joint program with UCLA), Ed.D.; Educational Technology Leadership, M.A.; Environmental Analysis and Design, B.A.; Geography, B.A.; Health Psychology, Ph.D.; Human Development, Ph.D.; Humanities, B.A.; Linguistics, B.A.; Public Administration, M.B.P.A., M.P.A.; Radiological Sciences, M.S., Ph.D.; Russian, B.A.; Spanish, M.A.T.; Urban and Regional Planning, Ph.D.

Privacy and Student Records

The University of California campuses maintain various types of records pertaining to students; some are maintained for academic purposes; others, such as hospital and employment records, are maintained for other specific purposes. Student records —that is, those pertaining to students in their capacity as students—include but are not limited to academic evaluations, transcripts, test scores and other academic records, general counseling and advising records, disciplinary records, and financial aid records. At UCI, an "applicant" becomes a "student" at the time of submission of their Statement of Intent to Register form.

The disclosure of information from student records is governed in large measure by the Federal Family Educational Rights and Privacy Act of 1974 (FERPA), by the State of California Education Code, and by University policy and procedures implementing these laws which protect the student's right of privacy, provide safeguards for the confidentiality of student records, and permit students access to their own records.

Pursuant to the Federal Family Educational Rights and Privacy Act of 1974 and the University of California Policies Applying to the Disclosure of Information from Student Records, students at the University have the following five rights:

1. To inspect and review records pertaining to themselves in their capacity as students
2. To inspect records maintained by the campus of disclosure of personally identifiable information from their student records
3. To seek correction of their student records through a request to amend the records or a request for a hearing
4. To file complaints regarding alleged violation of the rights accorded students by the Federal Act with the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Avenue S.W., Washington, D.C. 20202-5920; http://www.ed.gov/policy/gen/guid/fpco/index.html
5. To have withheld from disclosure, in the absence of their prior consent for release, personally identifiable information from their student records, with exceptions as noted in the University student records policies

There are instances in which information can be disclosed without prior written consent of the student. University officials may require access to student records in the course of the performance of their assigned duties. Further, confidential information can be disclosed without prior written consent of the student (a) in connection with conditions of certain financial aid awards;

(b) when the campus is complying with a judicial order or subpoena; and (c) when authorized federal or State officials are conducting an audit or evaluation of federally supported educational programs. There are also other situations in which the University is required to disclose information. See *University of California Policies Applying to Campus Activities, Organizations, and Students, Part B, Section 130.721* for a list of exceptions.

Normally, the campus will release the following as personally identifiable information which can be made public:

- student's name
- date and place of birth
- address (local and/or permanent)
- campus e-mail address
- telephone numbers
- dates of attendance
- major field of study
- grade level
- degrees and honors received
- number of course units in which enrolled
- enrollment status, (e.g., undergraduate or graduate, full-time or part-time)
- most recent previous educational institution attended
- participation in officially recognized activities, including intercollegiate athletics
- name, weight, and height of participants on intercollegiate University athletic teams
- photo

However, students have the right to refuse to permit any or all of these categories to be designated public information with respect to themselves. Students should view the UCI Student Information Release Matrix on the Registrar's Web site at http://www.reg.uci.edu to see what information is available for release, and what groups may have access to that information.

Students wishing to restrict release of public information should contact the Registrar's Office for instructions on how to do so. Questions regarding the rights of students under the University policies and the federal law should be directed to the University Ombudsman, University Tower, Suite 640.

If a student requests that information from his or her records not be regarded as public information, then the information will not be released to anyone without the written consent of the student. The student should be aware of the important implications of exercising this right. For example, if a request is made to withhold from disclosure a student's name and degrees and honors received, the campus cannot release for publication information on any honors received by the student, such as election to Phi Beta Kappa, and cannot include the student's name and degree earned in the campus commencement program without the written consent of the student. Similarly, if a request is made to withhold from disclosure a student's name and dates of attendance, a student's status as a student cannot be verified for potential employers without the written consent of the student. Further, if a student's last instruction to the campus was to withhold from disclosure the degree granted to that student and the date on which the degree was conferred, that information cannot be confirmed for a third party in connection with the appointment of that graduate to a new position or in connection with an honor that individual received without the written consent of the student.

It is extremely important for each student to keep the Registrar's Office currently informed as personal data changes occur to assure that accurate and complete records are maintained.

Students are informed annually of their rights under the University's student records policies and FERPA. Copies of the FERPA and University and campus policies are available for review in the Reference Room, Langson Library. In addition, University policies are published in *University of California Policies Applying to Campus Activities, Organizations, and Students,* available online at http://www.students.uci.edu/conduct/uci_policy.php#130.00.

Complaints regarding alleged violation of the rights accorded students by FERPA may be filed with the Family Policy Compliance Office.

Types and locations of major student records maintained by the campus are listed in the following table; consult the UCI Web site at http://www.uci.edu or the Campus Directory or building directories for room numbers.

Type of Record	Location of Record	Responsible Official
School, department, or program	Administrative office for particular unit	Dean, Chair, or Director
Academic Testing Center	Student Services II	Director, Testing Center
Admissions—Undergraduate	Aldrich Hall	Director, Admissions and Relations with Schools
Admissions—Graduate	Aldrich Hall	Dean, Graduate Division
Admissions—School of Medicine	Med. Sci. I	Director, Admissions
Career Center	Student Services I	Director, Career Center
Child Care Services	Early Childhood Education Center	Director, Child Care Services
Counseling	Student Services	Director, Counseling Services
Dean of Students	Student Center	Dean of Students
Disability Services	Disabled Student Center	Director, Disability Services
Education Abroad Program	Student Services II	Coordinator, EAP
Financial Aid	Aldrich Hall	Director, Financial Aid
Financial Services (Cashier, Collections)	Aldrich Hall	Manager, Financial Services
Housing	Student Center	Director, Housing
International Center	International Center	Director, International Center
Learning and Academic Resource Center	Fourth Floor, Social Science Tower	Director, Learning and Academic Resource Center
Ombudsman Services	University Tower	University Ombudsman
Parking	Public Services Building	Parking Supervisor
Registrar— Graduate/Undergraduate School of Medicine School of Law	Aldrich Hall Med. Sci. I Law Building	University Registrar Assistant Deputy Registrar Law School Registrar
Relations with Schools	Aldrich Hall	Director, Admissions and Relations with Schools
Student Academic Advancement Services	Student Services II	Director, Student Academic Advancement Services
Student Conduct	Student Center	Dean of Students
Student Health	Student Health Center	Director, Student Health
Summer Session	University Extension	Director, Summer Session
Undergraduate Education	Aldrich Hall	Dean, Undergraduate Education
University Extension	University Extension	Dean, Continuing Education
Veterans		Coordinator, Veterans Student Services
Incidental Records (minutes of various committees, copies of correspondence in offices not listed above, and other records not listed)	Aldrich Hall	Vice Chancellor Student Affairs, or other Student Affairs officials (for conduct issues, could be Dean of Students, Dean of Undergraduate Education, or Dean of the Graduate Division)

NOTE: Pursuant to the Federal Family Educational Rights and Privacy Act of 1974 (FERPA), individual institutions may implement disclosure policies that exceed those outlined in the Act. It should be noted that University of California policies are more restrictive than those outlined in FERPA. The disclosure policies for the UC campuses are outlined in the *University of California Policies Applying to the Disclosure of Information from Student Records, sections 130.00-134.00.*

Sexual Harassment and Consensual Relationships Policies

Adapted from the full text of the UC Policy on Sexual Harassment

The University of California is committed to creating and maintaining a community where all persons who participate in University programs and activities can work and learn together in an atmosphere free of all forms of harassment, exploitation, or intimidation. The University is strongly opposed to sexual harassment, and such behavior is prohibited both by law and by University policy. Any member of the University community may report conduct that may constitute sexual harassment under this policy. The University will respond promptly and effectively to reports of sexual harassment, and will take appropriate action to prevent, to correct, and if necessary, to discipline behavior that violates this policy. This policy also prohibits retaliation against a person who reports sexual harassment, assists someone with a

report of sexual harassment, or participates in an investigation or resolution of a sexual harassment report. Consensual sexual or romantic relationships between members of the University community are subject to other University policies, including the Faculty Code of Conduct and the UCI Policy on Conflicts of Interest Created by Consensual Relationships.

Questions or reports regarding the UC Policy on Sexual Harassment or the consensual relationships policies may be directed to Kirsten K. Quanbeck, Sexual Harassment/Title IX Officer and Assistant Executive Vice Chancellor/Director of the Office of Equal Opportunity and Diversity at (949) 824-5594 or oeod@uci.edu.

Links to the full text of the UC Policy on Sexual Harassment, the Faculty Code of Conduct, and the UCI Policy on Conflicts of Interest Created by Consensual Relationships are available at http://www.oeod.uci.edu/sho/shpolicies.html.

Nondiscrimination Policy Statements

Student-Related Matters. The University of California, in accordance with the applicable Federal and State law and University policy, does not discriminate on the basis of race, color, national origin, religion, sex, gender identity, pregnancy,[1] physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services.[2] The University also prohibits sexual harassment. This nondiscrimination policy covers admission, access, and treatment in University programs and activities.

Employment Practices. The University of California prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, gender identity, pregnancy,[1] physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (as defined by the Uniformed Services Employment and Reemployment Rights Act of 1994).[2]

University policy also prohibits retaliation against any employee or person seeking employment for bringing a complaint of discrimination or harassment pursuant to this policy or against a person who assists someone with a complaint of discrimination or harassment, or who participates in any manner in an investigation or resolution of a complaint of discrimination or harassment.

The University of California is an affirmative action/equal opportunity employer. The University undertakes affirmative action to assure equal employment opportunity for minorities and women, for persons with disabilities, and for covered veterans.[3]

University policy is intended to be consistent with the provisions of applicable State and Federal laws. Inquiries regarding the University's nondiscrimination policy may be directed to: Kirsten Quanbeck, Assistant Executive Vice Chancellor, Director/Title IX Officer, UCI Office of Equal Opportunity and Diversity; 103 Multipurpose Science and Technology Building, Irvine, CA 92697-1130; oeod@uci.edu; telephone (949) 824-5594 (voice), 824-7593 (TDD).

[1] Pregnancy includes pregnancy, childbirth, and medical conditions related to pregnancy or childbirth.

[2] Service in the uniformed services includes membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services.

[3] Covered veterans includes veterans with disabilities, recently separated veterans, Vietnam-era veterans, veterans who served on active duty in the U. S. Military, Ground, Naval or Air Service during a war or in a campaign or expedition for which a campaign badge has been authorized, or Armed Forces service medal veterans.

ABOUT THE CATALOGUE

Catalogue Information, Design, and Production Coordination

Leslie A. O'Neal, *General Catalogue* Editor, Office of Academic Affairs
Theresa Blasingame, Office of Academic Affairs

Photographs

Housing Administrative Services
Paul Kennedy, provided courtesy of the Claire Trevor School of the Arts
Program in Nursing Science
UCI Intercollegiate Athletics
University Editor's Office, Academic Affairs

Salary and Employment Information

Field of Study	Degree Level of Graduates: Bachelor's	Master's	Doctorate
	Average Annual Salary *		
Arts	$ 35,073	$ —	$ —
Biological Sciences	35,522	40,108	44,956
Computer Science	54,532	73,826	87,216
Engineering	57,184	67,576	77,132
Humanities	37,683	39,099	48,740
Management	—	61,353	91,734
Physical Sciences	49,204	53,498	63,302
Social Sciences	36,962	47,624	51,593

* Source: A national survey conducted by the National Association of Colleges and Employers, representing the average range of offers as of fall 2008 throughout the country. It should be noted that a wide variation in starting salaries exists within each discipline based on job location, type of employer, personal qualifications of the individual, and employment conditions at the time of job entry.

UCI Six-Year Graduation Rates by Sex and Ethnicity

FALL 2003 — **All Entering Freshmen**

Sex and Ethnicity	Entered	Graduated	%Graduated
Men			
Nonresident Alien	38	31	81.6%
African American	27	19	70.4%
American Indian	7	4	57.1%
Asian	1,065	877	82.3%
Hispanic	207	142	68.6%
Other/Unknown	216	179	82.9%
White	489	381	77.9%
Total	**2,049**	**1,633**	**79.7%**
Women			
Nonresident Alien	25	20	80.0%
African American	61	50	82.0%
American Indian	8	7	87.5%
Asian	990	865	87.4%
Hispanic	231	170	73.6%
Other/Unknown	168	144	85.7%
White	482	388	80.5%
Total	**1,965**	**1,644**	**83.7%**
Total Entering Freshmen			
Nonresident Alien	63	51	81.0%
African American	88	69	78.4%
American Indian	15	11	73.3%
Asian	2,055	1,742	84.8%
Hispanic	438	312	71.2%
Other/Unknown	384	323	84.1%
White	971	769	79.2%
Total	**4,014**	**3,277**	**81.6%**

Students who declined to state their gender are included in Men, Other/Unknown.

Source: UC Irvine Office of Institutional Research

UCI Six-Year Graduation Rates of Freshmen Who Received Athletically Related Financial Aid

FALL 2003 ENTERING FRESHMEN

	MEN			WOMEN		
	Entered	Graduated	% Graduated	Entered	Graduated	% Graduated
Total	**44**	**23**	**52.3%**	**32**	**22**	**68.8%**

Source: UC Irvine Office of Institutional Research

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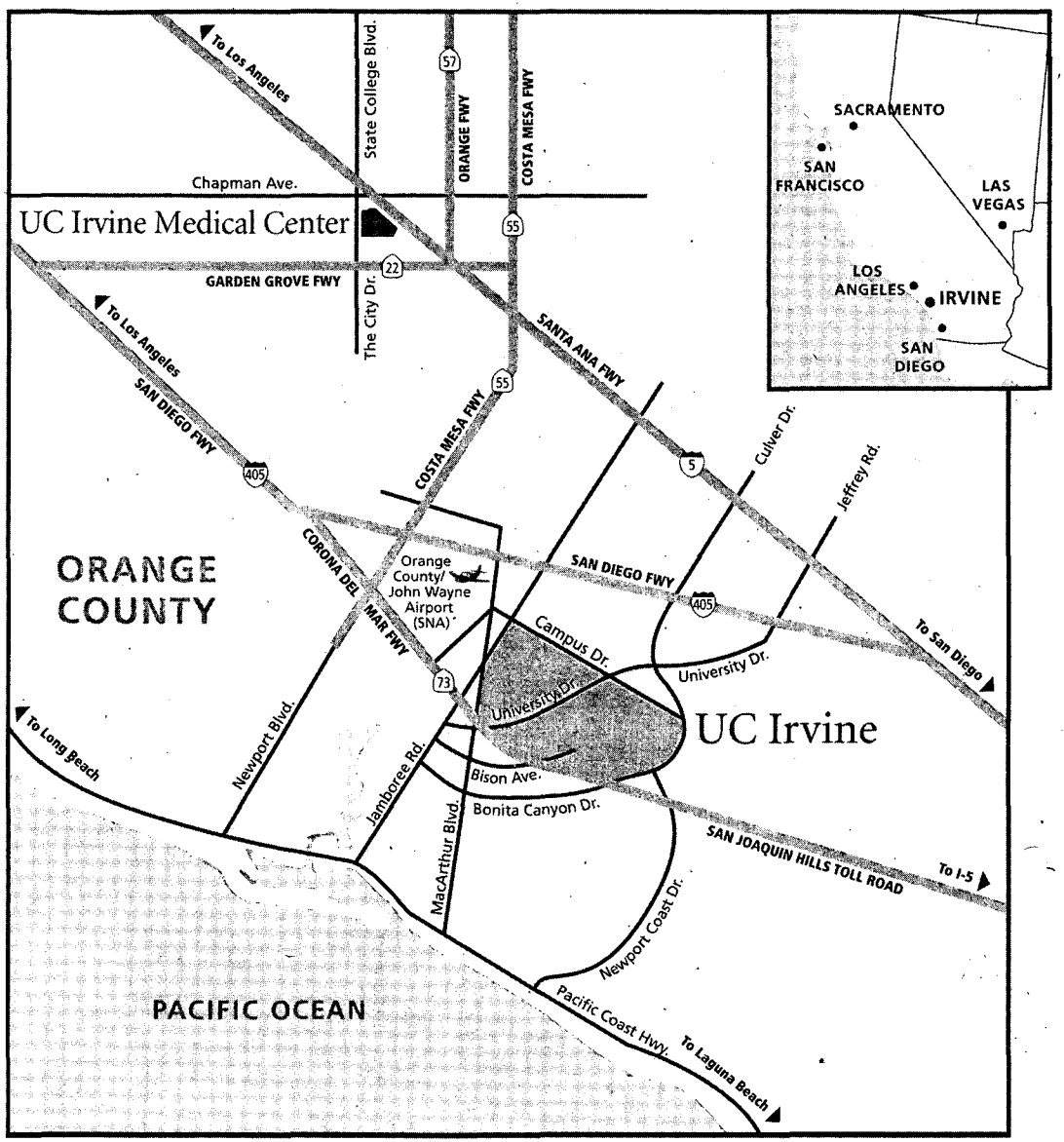
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DIRECTIONS TO MAIN CAMPUS

405 FREEWAY

From the North
Exit at Jamboree Rd.
Right on Jamboree Rd.
Left on Campus Dr.
Right on West Peltason Dr. into UCI

From the South
Exit at University Dr.
Left on University Dr.
Left on Campus Dr.
Right on West Peltason Dr. into UCI

5 FREEWAY

From the North
Take 5 South to 55 South to 73 South
Exit at Bison Ave.
Left on Bison Ave. into UCI

From the South
Take 5 North to 405 North
Exit at University Dr.
Left on University Dr.
Left on Campus Dr.
Right on West Peltason Dr. into UCI

73 FREEWAY

From the North
Exit at Bison Ave.
Left on Bison Ave. into UCI

From the South (toll)
Exit at Bison Ave.
Right on Bison Ave. into UCI

55 FREEWAY

From the North
Take 55 South to 73 South
Exit at Bison Ave.
Left on Bison Ave. into UCI

From the South
Take 55 North to 73 South
Exit at Bison Ave.
Left on Bison Ave. into UCI

DIRECTIONS TO MEDICAL CENTER

5 FREEWAY

From the North
Exit at The City Dr.
Right on The City Dr.
Left on Dawn Way; parking structure on left

From the South
Exit at Chapman Ave.
Left on Chapman Ave.
Left on The City Dr.
Left on Dawn Way; parking structure on left

22 FREEWAY

From the East or West
Exit at The City Dr.
Left on The City Dr.
Right on Dawn Way; parking structure on left

57 FREEWAY

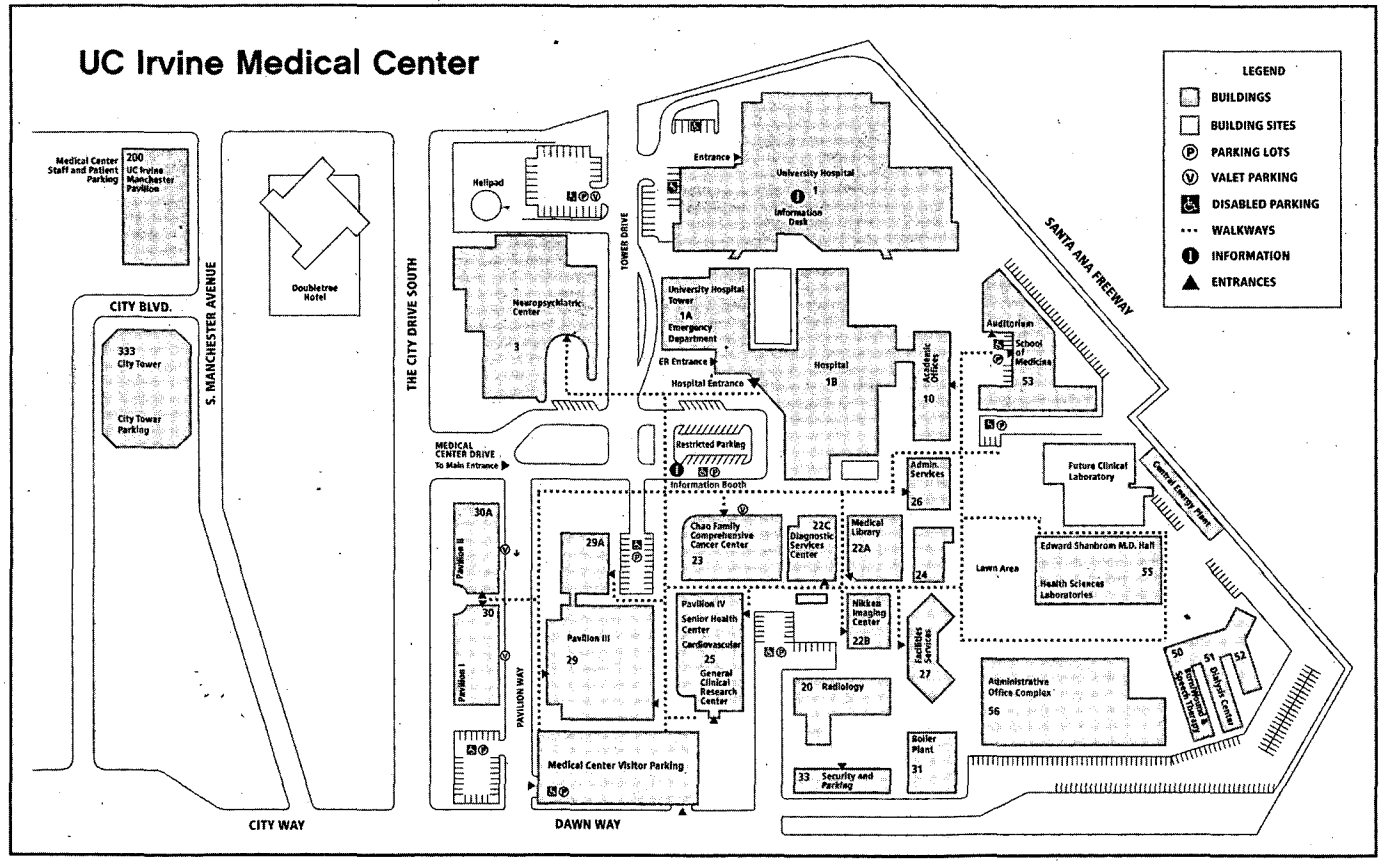
From the North
Exit at Chapman Ave. (Orange)
Right on Chapman Ave.
Left on The City Dr.
Left on Dawn Way; parking structure on left

From the South
Exit at Chapman Ave. (Orange)
Left on Chapman Ave.
Left on The City Dr.
Left on Dawn Way; parking structure on left

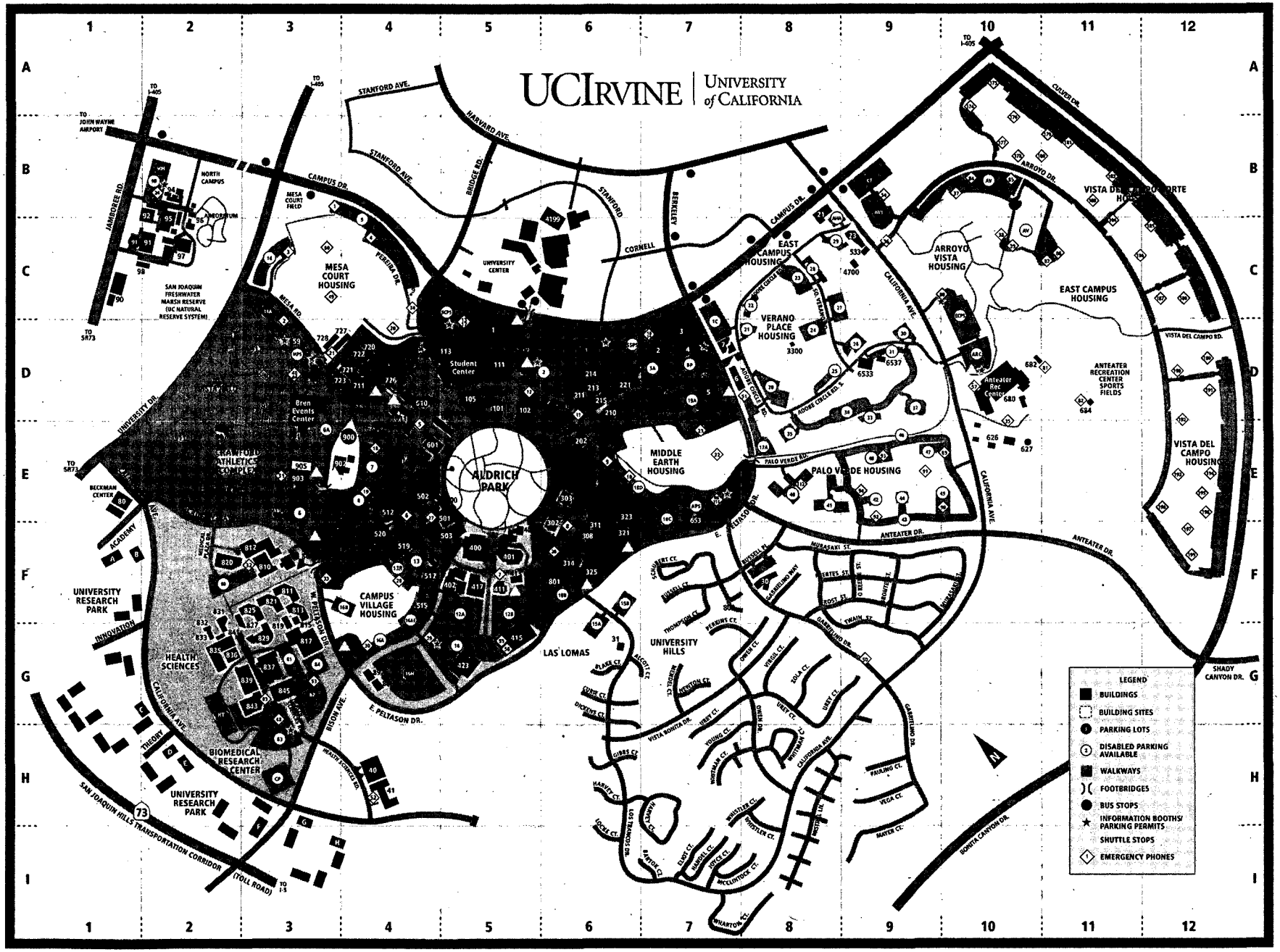
UCIRVINE | UNIVERSITY of CALIFORNIA

UC Irvine Medical Center
101 The City Drive S.
Orange, CA 92869

Acute Rehabilitation Unit **3**
Administrative Office Complex **56**
Admissions **1**
Aesthetic & Plastic Surgery Institute **200**
Auditorium **53**
Billing Information **200**
Blood Donor Center **29**
Cardiac Catheterization Lab **1**
Cardiac Diagnostic Center **30**
Cardiovascular Services **25**
Cashier **1**
Center for Fetal Evaluation **200**
Center for Sleep Medicine **22C**
Center for Urological Care **29**
Chao Family Comprehensive Cancer Center **23**
Radiation Oncology **23**
Infusion Center **23**
Chao (H.H.) Comprehensive Digestive Disease Center **22C**
Chaplain **1**
Clinical Laboratory **1**
Corporate Compliance & Privacy Office **333CT**
CT Scan **1A, 22B**
Diagnostic Radiology **1A**
Diagnostic Services Center **22C**
Dialysis Center **51**
Dining Room **1**
Emergency Room Services **1A**
Facilities Services **27**
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Valet Ⓥ
Vice Chancellor for Health Affairs **333CT**
Volunteer Services **56**
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UC IRVINE MAIN CAMPUS



FEBRUARY 2009

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21 American Heart Association (B9)
23 Early Childhood Education Center (B9)
30 University Montessori School (F8)
31 Faculty/Staff Housing Office (G6)
40 Electrical Substation (H4)
41 Env. Health & Safety Services Facility (H4)
58 Mesa Arts Building MAB (D3)
59 Mesa Office Building MOB (D3)
80 Beckman Center of the National Academies of Sciences & Engineering (E1)
90 Child Development Center CD (C1)
91 Receiving (C2)
92 Interim Office Building (B2)
93 Mailroom (B2)
94 Air Pollution Labs APL (B2)
95 Faculty Research Facility FRF (B2)
96 Arboretum ARBO (B2)
97 Facilities Management Shops (C2)
98 Recycling Center (C2)
101 Gateway Study Center GC (D5)
102 Langson Library LLIB (Main Library) (D5)
103 Cross-Cultural Center CRCC (D5)
105 Student Services I, II SS1, SS2 (D5)
111 Aldrich Hall ALH (Administration) (D5)
113 Student Center SC (D5)
200 Social Science Hall SSH (E6)
201 Social Science Tower SST (D6)
202 Social Science Laboratory SSL (E6)
203 Social Science Trailer SSTR (D6)
204 Phoenix Grille PHX GRILL (E6)
210 Social Ecology I SE (D6)
211 Social Science Plaza A SSPA (D6)
212 Social Science Lecture Hall SSLH (D6)
213 Social Science Plaza B SSPB (D6)
214 Social & Behavioral Sciences (D6)
215 Social Ecology II SE2 (D6)
221 Merage School of Business SB (D6)
230 University Extension B UNEX (D7)
231 Women's Opportunities Center/University Extension A UNEX (D7)
232 University Extension C UNEX (D7)
233 Alumni House AH (D7)
234 University Extension D UNEX (D7)
236 University Extension H UNEX (D7)
238 University Extension ESL Offices (D7)
302 *Information & Computer Science ICS (E6)*
303 Engineering Tower ET (E6)
304 Information & Computer Science 2 ICS2 (F6)
305 Engineering Lecture Hall ELH (E6)
308 Engineering III (F6)
311 Rockwell Engineering Center REC (F6)
313 Disability Services Center (E6)
314 Bren Hall DBH (F6)
315 Interim Classroom Facility ICF (E6)
317 Engineering & Computing Trailer ECT (E6)
319 Interfaith (E6)
321 Engineering Gateway EG (F6)
323 Engineering Laboratory Facility ELF (E6)
325 Calif. Inst. for Telecom. & Info. Tech. [Calit2] (F6)
400 Rowland Hall RH (F5)
401 Reines Hall FRH (F5)
402 Natural Sciences II NS2 (F5)
403 *Parkview Classroom Building PCB (F5)*
404 Physical Sciences High Bay (F5)
411 Physical Sciences Lecture Hall PSLH (F5)
413 Physical Sciences Classroom Building PSCB (F5)
415 Multipurpose Science & Technology Bldg. MSTB (G5)
417 Croul Hall CRH (F5)
423 Administrative Modular (G5)
500 B.C.'s Cavern on the Green (E5)
501 Schneiderman Lecture Hall HSLH (E5)
502 Steinhaus Hall SH (E4)
503 McGaugh Hall MH (F5)
506 Qureshey Research Laboratory QRL (E4)
512 Bonney Research Laboratory BRL (E4)
514 Greenhouse (E4)
515 Biological Sciences Administration BSA (F4)
516 Center for the Neurobiology of Learning & Memory Annex CNLMA (E4)
517 Natural Sciences I NS1 (F4)
519 Biological Sciences III (F4)
520 Science Library SLIB (F4)
521 KUCI Radio Station (E4)
522 Arts Computation Engineering Trailers ACE (E4)
523 Humanities Interim Classroom Facility/Studio Art Trailer HICF (E4)
533 Infant/Toddler Center (C9)
560 Founders' Court (E4)
600 Krieger Hall KH (D5)
601 Humanities Hall HH (E4)
603 Drama Design Laboratory (E5)
610 Humanities Instructional Building HIB (D4)
611 Humanities Gateway HG (D4)
625 Humanities Office Bldg. 2 HOB2 (E4)
626 Farm School/Red Barn (E10)
627 Yurt Dance Studio (E10)
653 Anteater Instruction & Research Building AIRB (E7)
680 Anteater Recreation Center ARC (D10)
682 Court Building (D10)
684 *Field Building (D11)*
710 Smith Hall WSH, Rehearsal Studio (D4)
711 Trevor Theatre CTT (D4)
712 University Art Gallery (D4)
Beall Center for Art & Technology (D4)
713 Studio Theatre & Dance Studios (D4)
714 Arts Instruction & Technology Resource Center AITR (D4)
715 Drama Building DRA (D4)
718 Choral Studio (D4)
720 Sculpt./Ceramic Studios/Nixon Theatre SCS (D4)
721 New Media Arts Center (D4)
722 Art Studio ART (D4)
723 Production Studio (D4)
725 Studio Four STU4 (D4)
726 Music & Media Building MM (D4)
727 Art, Culture & Technology ACT (D4)
728 Performance Studios PSTU (D3)
800 Cafe Med (F3)
801 University Club UN CLB (F6)
802 Berk Hall BH (F3)
810 Medical Surge I MS1 (F3)
811 Medical Sciences B MS-B (F3)
812 Medical Surge II MS2 (F3)
813 Medical Sciences A MS-A (F3)
815 Medical Sciences A Administration (F3)
817 Beckman Laser Institute BLI (G3)
819 Medical Sciences A Annex (F3)
820 Gottschalk Medical Plaza (F2)
821 Medical Sciences C MS-C (F3)
825 Medical Sciences D, Cheney Hall (F3)
827 Medical Sciences E MS-E (F3)
829 Plumwood House PH (Hitachi) (G3)
831 Tamkin Student Lecture Building (F2)
832 MRI 4T Trailer (G2)
833 Medical Sciences Classroom Facility (G2)
835 Irvine Hall IH (G2)
836 Medical Education Building (G2)
837 Gillespie Neuroscience Research Facility GNRF (G3)
839 Sprague Hall SPH (G3)
841 MRI 3T Trailer (G2)
843 Hewitt Research Hall HRH (G3)
845 Gross Hall (G3)
897 Grounds Maintenance Facility (G4)
899 Building Services Bldg. (G4)
900 Thermal Energy Storage Tank (E4)
901 Bren Events Center (D3)
902 Central Plant CP (E4)
903 Crawford Hall CH (E3)
905 *Crawford Pool (E3)*
907 Track & Field House (E2)
909 Crawford Field (E2)
911 Anteater Stadium (E2)
913 Tennis Courts (D3)
915 Vista Field (D2)
917 Anteater Ballpark (D3)
919 Crawford Clubhouse (E3)
3300 Verano Preschool (D8)
4199 University Tower UT (B6)
4700 The Nest (Child Care) (C9)
6533 Extended Day Center (D9)
6537 Children's Center (D9)

Housing Complexes
Arroyo Vista AV (C10)
Campus Village CV (F4)
East Campus (C8, C11)
Las Lomas (G6)
Mesa Court MESA (C3)
Middle Earth ME (E7)
Palo Verde (E8)
University Hills (G7)
Verano Place (D8)
Vista del Campo (E12)
Vista del Campo Norte (B11)

University Research Park
A 111 Academy (F1)
B 101 Academy (F1)
C 100 Theory (G2)
D 101 Theory (H2)
E 111 Theory (H2)
F 5171 California (H3)
G 5201 California (H3)
H 5251 California (I4)

Claire Trevor School of the Arts

School of Biological Sciences

The Paul Merage School of Business

Department of Education

The Henry Samueli School of Engineering

School of Humanities

Donald Bren School of Information and Computer Sciences

Interdisciplinary Studies

School of Law

School of Physical Sciences

School of Social Ecology

School of Social Sciences

College of Health Sciences

Correspondence Directory

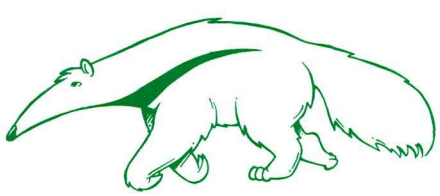
University of California, Irvine, CA 92697
Campus directory assistance: (949) 824-5011
Speech and hearing impaired persons: TTY (949) 824-6272

World Wide Web: http://www.uci.edu/

Office	Location	Telephone (949)
Admissions		
Undergraduate Admissions and Relations with Schools	260 Aldrich Hall	824-6703
Graduate	120 Aldrich Hall	824-4611
School of Law	1000 School of Law	824-4545
School of Medicine	Medical Education Building	824-5388
Associated Students	G244 UCI Student Center	824-5547
Bookstore	UCI Student Center	824-BOOK
Campus Tours and Visitor Center	A138 UCI Student Center	824-4636
Career Center	100 Student Services I	824-6881
Dean of Students	G308 UCI Student Center	824-5181
Disability Services Center	100 Disability Services Center	824-7494
Financial Aid and Scholarships	102 Aldrich Hall	824-8262
Housing Outreach Services	G465 UCI Student Center	824-7247
International Center	500 E. Peltason Drive	824-7249
Registrar	215 Aldrich Hall	824-6124
Student Health Center	501 Student Health	824-5301
Summer Session	UCI Extension, Bldg. D	824-5493
Transfer Student Services	204 Aldrich Hall	824-6703
UC Irvine Medical Center	101 The City Drive South Orange, CA 92868	(714) 456-7890
Veteran Services	G301 UCI Student Center	824-3500
Vice Chancellor Student Affairs	405 Aldrich Hall	824-4804

Help Central Line (949) 824-0440

This campus service is a one-stop shop for questions about available resources on-campus and in the community. Counselors are prepared to discuss a wide range of concerns such as general campus resources, locating employment, housing issues, finding medical insurance/medical care, opportunities to get involved, financial aid or income concerns, and counseling/mental health services.



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